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# TRAFFIC IMPACT STUDY

for

**Hudson Logistics Center  
43 Lowell Road  
Hudson, New Hampshire**

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## EXECUTIVE SUMMARY

Langan has prepared this traffic impact study to identify the operating conditions of the existing roadway network, the potential impacts of the amended Hudson Logistics Center (HLC) redevelopment at 43 Steele Road in Hudson, New Hampshire (See Figure 1 for the Location Map), improvements to address existing conditions, and to mitigate the impacts of the proposed development. The project site is approximately 377 acres, which is currently the Green Meadows Golf Course.

The town recently approved a three building fulfillment center warehouse development of 2.6 million square-foot under application SP04-20 on the subject site. The applicant is requesting to amend the development with a single building, with a  $\pm 1.4$  million square-foot footprint, to be operated by a single fulfillment center warehouse tenant. There are accessory structures (truck court guardhouse, maintenance building, and transportation center) supporting the operations on the site. **We compared the trip generation data for both developments (approved and amended) and determined that the single tenant will generate less average daily traffic (2406) compared to the approved development (4114), a 42% reduction in trips.** The peak hour volumes of the amended development are generally the same volumes as the approved development. As would be expected, the study intersections are anticipated to operate in similar or better conditions compared to the approved development.

Even though the proposed amended development is expected to generate significantly less average daily traffic than the approved development, to mitigate the peak hour volumes the applicant is committing to the construction of all the improvements identified in the previous approval and will have the same two private access driveways for the site as previously planned. One driveway (Green Meadow Drive) will connect to Lowell Road at the current location of the Mercury Systems driveway, at the intersection with Rena Avenue. The second site driveway is an extension of Wal-Mart Boulevard into the proposed development. (See Site Plan in Appendix A). Due to the configuration and operations associated with the new site plan, the Wal-Mart Boulevard driveway will be the primary access for trucks.

The proposed tenant's facility, a fulfillment center warehouse, has a similar role in the supply chain as the previously approved HLC development. This facility is a link in the tenant's supply chain and will not serve consumers directly.

The development's building construction schedule is anticipated to start in 2023 with a completion date of late 2024. Therefore, design years of the previous study (2022 and 2032) has changed to a build year analysis of 2024 and a 10-year horizon build-out for 2034, in accordance with New Hampshire Department of Transportation guidelines.

The proposed project's trip generation is based on ITE Land Use Code 155 High-Cube Fulfillment Center Warehouse (Non-Sort) which was used to evaluate the peak-hour 2024 opening year and the 2034 horizon year traffic operating conditions. The proposed tenant has developed very

specific operational characteristics for this facility and have purposely staggered shift changes outside the roadway peak hours to further mitigate the project's impacts to the surrounding roadway network. For the purpose of this study, we are assigning the expected trip generation peak-hours of the generator to the roadway peak-hours to provide a conservative analysis, resulting in an over estimation of the traffic impacts.

A review of the analysis for the amended development shows that all study intersections are expected to operate within an acceptable Level of Service (LOS) and at better or similar conditions compared to the previously approved development. The proposed improvements will improve existing operating conditions and mitigate the project related traffic impacts. The adaptive signal control technology to be implemented at the five intersections on the Lowell Road corridor will operate more efficiently than traditional signals by adapting to video observations of the actual volumes on the road at any specific time.

Based on our analyses, the following previously approved by Hudson and NHDOT improvements continue to be recommended to improve existing operating conditions and mitigate the potential traffic impacts associated with the proposed development:

- Installation of new adaptive traffic signal controllers at the following intersections and place these intersection under town of Hudson control:
  - Lowell Road (Route 3A) & Wason Road/Flagstone Drive
  - Lowell Road (Route 3A) & Sagamore Bridge Road
  - Lowell Road (Route 3A) & Wal-Mart Boulevard
  - Lowell Road (Route 3A) & Green Meadow Drive/Rena Avenue
  - Lowell Road (Route 3A)/River Road/Dracut Road/Steele Road (depending on option selected)
- Signal timing optimization at the following intersections during the 2034 conditions:
  - Lowell Road (Route 3A) & Executive Drive
  - Lowell Road (Route 3A) & Fox Hollow Drive
  - Lowell Road (Route 3A) & Pelham Road
- Construction of the following improvements at the intersection of Lowell Road and Dracut Road /Steele Road:
  - Restripe one of the southbound thru lanes to a second exclusive left-turn lane onto Dracut Road and widen Dracut Road south of the intersection to accept a second receiving lane, which would transition back down to a single lane with a lane drop
  - Replace the stormwater drainage culvert under Lowell Road
- Construction of the following improvements at the intersection of Lowell Road and Rena Avenue/Mercury Systems driveway
  - Reconfigure the Mercury Systems driveway (Green Meadow Drive) as a private driveway serving both Mercury Systems and the proposed development, intersecting with Rena Avenue at the existing traffic signal

- Provide two left-turn lanes and a shared thru/right-turn lane on the eastbound approach
  - Widen the west side of Lowell Road to provide a southbound exclusive left-turn lane, two thru lanes and a shared thru/right-turn lane.
  - Adjust the existing median island north of the intersection to allow for turning movements from Green Meadow Drive
- Reconstruction the intersection of Lowell Road and Wal-Mart Boulevard
  - Construct a southbound exclusive right turn lane with approximately 315 feet of storage by modifying the existing median north of Wal-Mart Boulevard and restripe the northbound existing lanes.
  - Convert the existing northbound exclusive right turn lane to a shared thru/right-turn lane and restripe/widen on the north side of the intersection to receive the additional through lane.
- Reconstruction the intersection of Lowell Road and Sagamore Bridge Road
  - Construction of a third northbound left-turn lane
  - Widen/restripe a segment of Lowell Road (Route 3A) to provide three northbound thru-lanes from Rena Avenue to Wal-Mart Boulevard
  - Reconfigure the channelization island on Lowell Road
- Reconstruct the intersection of Lowell Road and Wason Road/Flagstone Road
  - Construction of a second northbound right-turn lane
  - Construction of an additional receiving lane on Wason Road eastbound to accept the two right-turning lanes from Lowell Road northbound
  - Provide a lane drop approximately 700 feet east of Lowell Road to meet existing Wason Road eastbound geometry
- 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.

In addition to the proposed improvements, as per the previous approval, the applicant has agreed to fund the potential future improvements identified at the intersection of Lowell Road and Wason Road/Flagstone Road in the form of an escrow account up to \$1,000,000. These improvements may include the following items:

- Widen the northbound approach to provide an exclusive left-turn lane, three thru lanes and two exclusive right-turn lanes
- Widen the eastbound approach to provide a shared left-turn/thru lane and two exclusive right-turn lanes
- Widen to provide an additional northbound receiving lane on the north side of the intersection that becomes an exclusive right-turn lane into the Market Basket plaza
- Install variable lane usage signing/controls for the northbound approach to allow for two exclusive left-turn lanes, two thru lanes and two exclusive right-turn lanes during the

weekday morning commuter peak to account for the high volume of left-turning traffic onto Flagstone Drive

In addition to the traditional Synchro analysis, a SimTraffic micro-simulation modeling was performed for all the intersection in the study area, with a focus on the intersection with the proposed adaptive signal control technology, based on the ITE trip generation. The SimTraffic model provides for additional operating characteristics to be considered in the analysis and more accurately reflects the effectiveness of the adaptive signal technology. The results of the analysis indicates that the roadway corridor will operate more effectively than indicated in the Synchro analysis indicates. This confirms that the roadway network has adequate capacity to accommodate the proposed development.

Another additional analysis was conducted to evaluate the actual tenant operating conditions, number of employees and the anticipated tenant trip generation. The proposed tenant has an operating program, which includes a specific shift changes and the number of employees on each of the two shifts. These shift changes generally occur outside of the roadway peak hours. In an effort to evaluate the potential impacts of the actual shift change traffic volumes, we prepared a 2024 build analysis of these tenant volumes during the roadway peak hours and compared it to the peak hour analysis based on ITE anticipated project trips and found that based on the tenant schedule the traffic impacts are expected to be generally similar or less compared to the ITE analysis. This would be expected, as the trip generation based on the tenant schedule is generally less during the evening peak hour, which is the timeframe with more traffic in the study area.

Upon implementation of the recommended improvements, the traffic impact of the proposed development is mitigated and existing operating conditions will be improved as compared to current conditions. It is our professional opinion that these improvements mitigate the traffic impacts of the proposed development.

The amended development is in compliance with the traffic related items in the town of Hudson Site Plan Criteria, Section 275-6, specifically:

**6(B) Traffic circulation and access, including adequacy of entrances and exits, traffic flow, sight distances, curb cuts, turning lanes and traffic signalization** - The results of the this traffic impact study indicates that the development and the associated proposed off-site improvements are compliant with the section of the Site Plan Criteria.

**6(C) Pedestrian and bicycle safety and access** - Pedestrian accommodations provide circulation throughout the site in areas of pedestrian activity and emergency egress. A sidewalk is provided along Green Meadow Drive, through the pick-up/drop-off area, and to the employee entrance. Multiple sidewalks and pedestrian crosswalks are provided in the employee parking lot providing safe and protected pedestrian access for the parking lots to the building, Sidewalks



are provided adjacent to the building and providing access to the employee entrance. The pick-up/drop-off area has been situated to direct access to the employee entrance via a sidewalk. Bike racks are provided adjacent to the employee entrance. The site driveways are wide enough to accommodate bicycles and vehicles.

**6(E) Emergency vehicle access, including fire lanes** – Provisions for emergency vehicles circulation has been provided at the two driveways and throughout the site, allowing for movements to all areas of the site. The proposed development also provides an emergency access road (extension of Steele Road) to provide the town's emergency services access adjacent to the Merrimack River. At gated access points emergency services will be provided provisions to provide them direct access in required. Fire lanes will be provided at locations where loading docks and parking are not adjacent to the building (to be coordinated with fire marshal).

**6(K) Suitably located travelways of sufficient width to accommodate existing and prospective traffic and to afford adequate light, air and access for fire-fighting apparatus and equipment to buildings, and be coordinated so as to compose a convenient system -**  
The public and private travelways are of sufficient width and configuration to accommodate the existing and proposed traffic, as well as access to the buildings for fire-fighting apparatus.

## 1.0 INTRODUCTION

Langan has prepared this traffic impact study to identify the operating conditions of the existing roadway network, the potential impacts of the amended Hudson Logistics Center (HLC) redevelopment at 43 Steele Road in Hudson, New Hampshire (See Figure 1 for the Location Map), improvements to address existing conditions, and to mitigate the impacts of the proposed development.

The town of Hudson recently approved a three building fulfillment center warehouse development of 2.6 million square-foot under application SP04-20 on the subject site. The applicant is requesting to amend the development with a single building, with a  $\pm 1.4$  million square-foot footprint, to be operated by a single fulfillment center warehouse tenant. There are accessory structures (truck court security shack, maintenance building, pull-thru inspection canopy, and a transportation center) supporting the operations on the site.

The site is bordered by residential properties to the south, the Merrimack River to the west, and Sagamore Bridge Road 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 amended development includes the construction of a single building along with associated parking, landscaping, utility improvements and stormwater systems are proposed to be constructed. The project site will have the same access two driveways to Lowell Road as previously planned and approved. The existing driveway to Mercury Systems, at the signalized intersection with Rena Avenue, will be reconfigured to provide access for the proposed development. The Mercury Systems parking lots will tie into the new driveway called Green Meadow Drive. The project also proposes an extension of 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 start in 2023 with a completion date of late 2024. Therefore, design years of the previous study (2022 and 2032) has changed to a build year analysis of 2024 and a 10-year horizon build-out for 2034, 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 access to the property will be abandoned and as previously planned two new private driveways are proposed. One driveway (Green Meadow Drive) will connect to Lowell Road at the current location of the Mercury Systems driveway, at the intersection with Rena Avenue. The second site driveway is an extension of Wal-Mart Boulevard into the proposed development. (See Site Plan in Appendix A). Due to the configuration and operations associated with the new site plan, the Wal-Mart Boulevard driveway will be the primary access for trucks.

### 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
- 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 the development's peak-hour traffic impacts 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 have 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 and 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* is a six lane east-west divided principal arterial – other road under state jurisdiction with a posted speed limit of 50 MPH. Sagamore Bridge Road 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. Sagamore Bridge Road 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 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 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/Steele 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 Steele 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 and roadway segments are based on the Highway Capacity Manual (HCM) 6<sup>th</sup> 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 6<sup>th</sup> Edition or HCM 2010 Edition methodologies; therefore the Synchro Percentile Delay methodology was utilized. For consistency throughout the capacity analysis, all of the intersections were analyzed utilizing the Percentile Delay methodology.

The HCM 6<sup>th</sup> Edition defines level of service for signalized intersections as follows:

<u>Level of Service</u>	<u>Control Delay per Vehicle (sec/veh)</u>
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:

<u>Level of Service</u>	<u>Control Delay per Vehicle (sec/veh)</u>
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 2024 and 2034 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 2024 and 2034 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 (TMCs) and vehicle classification counts were conducted in October 2019, pre-COVID, to determine the existing peak-hour traffic volumes. The TMCs 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

A review of the 2019 data indicates that at count station 62315281 on Everett Turnpike, October experienced the highest average ADT and therefore is representative of peak-month conditions. To determine the potential need to adjust peak-hour count data based on seasonal traffic fluctuations, the latest peak-hour and average daily traffic volumes were reviewed at NHDOT count station 229022, located in Hudson on Sagamore Bridge Road 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 seasonally adjusted 2019 existing traffic volumes. Figure 3 illustrates the 2019 existing peak-hour traffic volumes. A summary of the existing traffic operating conditions is provided in Tables 4 through 7. Detailed reports can be found in Appendix C.

## **5.2 Step Two: Project the existing peak-hour traffic volumes (Step One) to create 2024 and 2034 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 2024 and 2034 background ambient growth peak-hour traffic volumes shown in Figure 4A and Figure 5A.

This growth rate was approved for use by the NHDOT Bureau of Traffic for the previous study.

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 2024 and 2034 No-Build volumes:

- *Flagstone Crossing (225 Lowell Road)* – The project includes the construction of a mixed-use development consisting of a bank, retail, and restaurant users. This development was under construction when data was collected. This analysis includes the site-generated trips associated with the formerly approved Cumberland Farms project because the trip generation associated with the Flagstone Crossing was not provided to Langan at the time of the initial analysis. A review of the Flagstone Crossing Trip Generation & Site Access Letter, prepared by GPI and dated 9/30/2019, indicates that the trip generation for Flagstone Crossing is about 100 trips less than the former proposed Cumberland Farms, for both the weekday morning and evening peak-hours. It appears that these 100 trips are almost all pass-by trips, so the net change in “new” trips is not substantial. Considering the new trip generation for both developments is similar.
- *Distribution Warehouse (Friars Drive)* – The project includes the construction of a 504,000 square-foot distribution warehouse. A review of the traffic study for the proposed development, prepared by TFM and dated 9/07/2021, indicates that the proposed development is expected to generate no more than 55 peak hour trips and approximately 70% of the project’s traffic will access the site through Sagamore Bridge Road. These volumes were added to the No-Build conditions.
- *Southbound Road Widening on Lowell Road @ Flagstone Road* – The development 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 and the town anticipates construction to begin in the fall of 2024 or early 2023. 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 and transition back to one lane prior to merging with the main line.

The above noted projects and developments have been included as part of the no-build analysis. Figure 4B includes the project trips associated with the committed/approved developments by the town of Hudson. We are unaware of any other substantial

developments that have been submitted or are under construction that should be accounted for in the no-build conditions of the study area.

### 2024 and 2034 No-Build Traffic Operating Conditions

The traffic operating conditions for the study area intersections were analyzed during the peak-hour periods using the 2024 no-build traffic volumes illustrated in Figure 4 and the 2034 no-build traffic volumes illustrated in Figure 5. A summary of the traffic operating conditions is provided in Tables 4 through 7. Detailed reports can be found in Appendix D and Appendix E.

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 experiences heavy commuter related directional traffic volumes in the morning peak-hour and in the evening peak-hour. Langan evaluated the existing and no-build traffic operations to determine areas of capacity deficiencies without the proposed HLC development.

A review of the existing and no-build capacity analyses indicate some intersections experience unsatisfactory overall levels-of-service (LOS), unsatisfactory 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 construction of the proposed Hudson Logistics Center. 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 mitigation measures to address both the existing conditions and full build-out traffic impacts 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 a single building, with a  $\pm 1.4$  million square-foot footprint, operated by a single fulfillment center warehouse tenant, with  $\pm 134$  loading docks,  $\pm 906$  trailer parking stalls and  $\pm 1,585$  car parking stalls. There are accessory structures (truck court security shack, maintenance building, and transportation center) supporting the operations on the site.

Associated site improvements, including utilities, stormwater drainage upgrades, and landscaping are also proposed as part of the development. A proposed driveway, Green

Meadow Drive, will connect to Lowell Road at the reconfigured Mercury Systems driveway, at the signalized intersection with Rena Avenue. The Mercury Systems parking lots will tie into the new roadway. The project also proposes an extension of 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

The proposed facility will be operated by a single tenant. The proposed warehouse will operate with the tenant's latest product management system intended to better integrate its distribution and fulfillment operations within their supply chain. This facility will not serve consumers directly.

This facility will have accessory buildings associated with its operations. There will be a truck court security shack, a fully-enclosed maintenance building, and a small transportation center building used by non-tenant transportation vendors.

The tenant has developed operational characteristics for this specific facility. This proprietary information identifies the number of employees, shift change timing, and truck volumes and timing specifically for this site. The facility is expected to generate approximately 2,533 unadjusted average daily trips (ADT), which is significantly less than the approved development's 4,331 ADT.

The facility is a 24/7 operations, with two shifts – a day shift and a night shift. The evening out-going and day in-coming shift change is staggered and separated by two and half hours, with the in-coming day shift traffic volume occurring prior to the morning roadway peak hour between 6:00 and 7:00 a.m. The evening shift change is simultaneous and intentionally occurs outside the existing roadway evening peak hour of 4:30- 5:30 p.m. The in-coming night shift traffic volumes will be in the roadway network during the evening peak hour. The anticipated truck activity of the facility is generally spread out throughout the entire day, with the majority of the truck trips occurring during the day – 70% of the truck trips occur between 6:00 a.m. – 6:00 p.m.

The ITE land use most closely associated with the proposed development is High-Cube Fulfillment Center Warehouse 155 (Non-Sort), similar to the previously approved development.

### Trip Generation

In developing the appropriate trip generation methodology used in this study we compared the tenant's anticipated trip generation and shift timing with the ITE Land Use Code 155 trip generation. The amended development includes a new building with a 1.4 million square-foot footprint, will include two mezzanines, totaling approximately 816,600

square-feet and miscellaneous accessory buildings for a gross-floor-area of +/-2.3 million square-feet. Using this gross-floor-area, Table 1 compares the tenant’s anticipated trip generation for this specific facility and the two ITE independent variables – peak hour of Generator and the peak hour of the Adjacent Street. Table 1 indicates that the Generator ITE independent variable most closely mimics the specific trip generation anticipated by the tenant for the facility. As the evening peak hour is the more critical period in the analysis, this study utilized the ITE LUC 155 (Non-Sort), Generator variable, to evaluate the impacts of the amended development on the roadway network.

<b>TABLE 1</b>									
<b>TRIP GENERATION COMPARISON - HLC (TENANT VS ITE)</b>									
USE	LAND USE CODE	PEAK HOUR SCENARIO	DAILY	AM PEAK HOUR			PM PEAK HOUR		
				ENTER	EXIT	TOTAL	ENTER	EXIT	TOTAL
Proposed HLC (2.3M SF)	Tenant <sup>1</sup>	Generator	2,533	554	4	558	557	11	568
	155 <sup>2</sup>	Generator	4,163	253	253	506	311	310	621
	155 <sup>2</sup>	Adj. St.	4,163	279	66	345	144	224	368

<sup>1</sup>Volume based on tenant provided trip generation and operational data.

<sup>2</sup>Volume based on ITE Trip Generation Manual 11 Edition.

We prepared a trip generation comparison (Table 2) between the approved and amended development based on ITE Land Use 155 and found that, in addition to the tenant’s trip generation being less than the approved development, the amended development will also generate less traffic than the approved development utilizing the ITE methodology. It should be pointed out that the tenant’s specific information for ADT is more reliable than the ITE ADT, as it represent the specific operations and the specific number of employees anticipated to work at the facility.

<b>TABLE 2</b>									
<b>TRIP GENERATION COMPARISON – HLC (APPROVED VS AMENDED)</b>									
USE	LAND USE CODE	PEAK HOUR SCENARIO	DAILY	AM PEAK HOUR			PM PEAK HOUR		
				ENTER	EXIT	TOTAL	ENTER	EXIT	TOTAL
Lot A - Distribution Warehouse (1.08M SF) <sup>1</sup>	N/A		1,631	184	54	238	187	197	384
Lot B - Distribution Warehouse (1.0M SF) <sup>1</sup>	155	Generator	1,830	110	110	220	135	135	270
Lot C - Rear Load Facility (522,000 SF) <sup>1</sup>	155	Generator	870	58	57	115	71	70	141
<i>Approved Trip Generation</i>			<i>4,331</i>	<i>352</i>	<i>221</i>	<i>573</i>	<i>393</i>	<i>402</i>	<i>795</i>
Amended HLC (2.3M SF)	155	Generator	4,163	253	253	506	311	310	621
<b>Net-new Trips (Amended less Approved)</b>			<b>-168</b>	<b>-99</b>	<b>32</b>	<b>-67</b>	<b>-82</b>	<b>-92</b>	<b>-174</b>

<sup>1</sup> Volume based on tenant provided trip generation and operational data.

<sup>2</sup> Volume based on ITE Trip Generation Manual 11 Edition and GSF of proposed building.

The volumes identified in the above tables represent the anticipated unadjusted trip generation, with no credits taken for multi-occupancy vehicles (mass transit, carpooling and ridesharing).

The trip generation approach outlined above should provide overestimation conservative analysis of the projected traffic from the Hudson Logistics Center, resulting in an overestimation, of the project traffic impacts. To reflect the reality of the operations of similar facilities, a 5% multi-occupancy vehicle credit is applied to the unadjusted volumes, as was applied in the previous approved traffic analysis. The proposed development will also have a dedicated drop-off area to encourage rideshare to service the site. If mass transit service is brought to the facility, it would represent a further reduction in trip generation volumes. This service has not been finalized, therefore no addition credit is applied. Although trips to and from the Green Meadow Golf Course are accounted for in the existing traffic counts, these trips were not removed from the No-Build volumes, therefore no credit was taken for the closing of the course. Table 3 below summarizes the adjusted trip generation for the proposed development and utilized in this analysis.

<b>TABLE 3</b>									
<b>PROPOSED TRIP GENERATION - HLC</b>									
<b>USE</b>	<b>LAND USE CODE</b>	<b>PEAK HOUR SCENARIO</b>	<b>DAILY</b>	<b>AM PEAK HOUR</b>			<b>PM PEAK HOUR</b>		
				<b>ENTER</b>	<b>EXIT</b>	<b>TOTAL</b>	<b>ENTER</b>	<b>EXIT</b>	<b>TOTAL</b>
Proposed HLC (2.3M SF) <sup>1</sup>	155	Generator	4,163 <sup>2</sup>	253	253	506	311	310	621
M-O Credit (5%)			208	13	13	26	16	16	32
<b>Net-new Trips</b>			<b>3,955</b>	<b>240</b>	<b>240</b>	<b>480</b>	<b>295</b>	<b>294</b>	<b>589</b>

<sup>1</sup> Volume based on ITE Trip Generation Manual 11 Edition

<sup>2</sup> Actual tenant unadjusted average daily trips is 2,533

The actual tenant projected unadjusted ADT shown in Table 1 is 2,533 trips. When applying the multi-occupancy vehicle credit, the resulting anticipated ADT on the roadway network is 2,406 trips, which is approximately 1,203 vehicles entering the site and 1,203 vehicles leaving the site on an average day. It should be pointed out that the ADT estimated based on ITE is significantly higher than the tenant specific trip generation; over 1,500 vehicle-per-day greater, and does not represent anticipate actual volumes generated by the development.

#### Peak-Hour Period

This traffic impact analysis will utilize the peak hour of the development 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 hour of the proposed facility is expected to occur between 6:00 and 7:00 in the morning and between 5:00 and 6:00 in the evening. The peak hours of the tenant and the area roadway network DO NOT occur simultaneously; however, this study will utilize the peak hours of the generators combined with the peak hours of the roadway network, providing a conservative analysis of the potential traffic impact of the development.

#### 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 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. This methodology matches up with the tenant's expectation for their workforce demographic. This methodology was approved in the previous approval and by NHDOT. The results were tabulated in the Journey to Work worksheet provided in Appendix B.

Once within the roadway network, the trips were routed to and from the site based on existing traffic patterns by combining and separating the distribution percentages from each approach and intersection. Based on the Journey to Work data available, approximately 15% of site-generated traffic will be accessing the site via the Lowell Road corridor, north of Sagamore Bridge Road. We expect employees living locally in northern Hudson to be driving both on Lowell Road and on local roads to enter and exit the site. We routed 15% of site-generated trips as through movements on Lowell Road from the intersection with Wason Road to Pelham Road, although we expect a portion of these trips to enter or exit the corridor throughout this segment to navigate to or from their destination. Due to existing peak demands on the Lowell Road corridor, the expected re-routing of these local-road-routed site-generated trips would decrease the development's expected impact on the Lowell Road corridor. In an effort to be conservative, the entire 15% of site-generated trips was routed through the analyzed Lowell Road corridor to provide an overestimation of the development impacts.

The proposed trip distribution is similar to what was approved by the town and the NHDOT used for the previously approved development.

### Peak-Hour Trip Assignment

Figure 7 illustrates the assignment of the peak-hour site-generated trips, indicated in Table 4, into the area roadway network.

### Truck Trip Generation, Distribution, & Assignment

The proposed tenant's facility, as a fulfillment center warehouse, has a similar role in the supply chain as the previously approved HLC development. This facility is a link in the tenant's supply chain and unlike one of the buildings in the approved development, this facility will not serve consumers directly. The tenant's operations indicate that truck trips to/from the facility will primarily use Sagamore Bridge Road and have limited truck traffic on local roads. The amended site plan and the single tenant operations results in truck circulation that is different than the previously approved development. The configuration of the site has the access to the truck court located on the north side of the building, which provides direct access to the driveway extension of Wal-Mart Boulevard. Therefore, the Wal-Mart driveway extension will be the primary access/egress for all truck supporting the facility. The tenant will direct the truck fleets and provide signage indicating truck should utilize this driveway.

The tenant has specific operational schedule for truck activity to/from the facility. The anticipated truck activity of the facility is generally spread out throughout the entire day, with the majority of the truck trips occurring during the day, with 70% of the truck trips occur between 6:00 a.m. – 6:00 p.m. and 62 % between 8:00 a.m. – 6:00 p.m.

It is anticipated that almost all of the tractor trailer truck traffic to and from the site will be arriving from and departing to Route 3 (Everett Turnpike) via the Lowell Road/Sagamore Bridge Road intersection, as this is the most direct, fastest and most efficient connection to HLC and the other facilities in the supply chain. The vast majority of the trucks servicing the HLC will not be accessing the site during the roadway peak hours, so the efficiency of the highway access is even more prevalent. Considering there is no more efficient or shorter connection, further to the north or south on Route 3A, to freeway facilities in proximity to the site, it is not anticipate that many tractor trailers will utilize Route 3A to access the site.

The operations of this facility will include incoming product to be warehoused and eventually delivered to the next step in the tenant's supply chain. The outgoing product will either go to one of the tenant's retail stores or via a third-party transportation vendor (USPS, FedEx, UPS, etc) to one of their facilities, to then be delivered to e-commerce customers. An evaluation of the locations of the third-party transportation vendor's facilities supports the statement above, which the preferred, shortest and most efficient route is for these trucks to use the Sagamore Bridge Road connector, accessing the highway system to reach their ultimate destination. The location of two tenant retail stores that have the potential for truck routing on local and state approved truck roadways.

The tenant's operations for this specific facility will generate approximately 180 trucks in to and out of the facility, spread out throughout the entire day, with 70% of the truck activity between 6:00 a.m. and 6:00 p.m. During the morning roadway peak hour it is also anticipated that there will 11 trucks into and 4 trucks out of the facility and during the evening roadway peak hour there will be less than 14 trucks into and 25 trucks out of the facility.

#### **5.4 Step Four: Combine the No-Build traffic volumes (Step Two) with the assigned proposed traffic (Step Three) to establish 2024 and 2034 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 2024 no-build traffic volumes (Figure 4) and the 2034 no-build traffic volumes (Figure 5). Figure 8 and Figure 9 illustrate the 2024 build traffic volumes and the 2034 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 and with the proposed improvements. Tables 4 through 7 compare the traffic operating conditions for the study area intersections during the peak-hour periods. Results shown under the build with the proposed improvements. Appendices F, G, H & I provide detailed reports for the 2024 and 2034 build conditions.

It should also be noted that for the intersections receiving adaptive signal control technology, the operational conditions cited in the tables below underestimate the improvements and that these intersections should operate more efficiently than depicted in the tables.

##### 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 50<sup>th</sup> and the 95<sup>th</sup> percentile queue lengths developed by the analysis. The 50<sup>th</sup> percentile queue represents the average or typical vehicular queue that can be expected during the peak-hour. The 95<sup>th</sup> 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 equates to a single vehicle. Tables 4 through 7 provide the expected 50<sup>th</sup> and 95<sup>th</sup> percentile queue lengths for the analyzed periods.

**TABLE 4  
OPENING YEAR CAPACITY ANALYSIS SUMMARY – WEEKDAY A.M. PEAK-HOUR**

INTERSECTION	CONTROL TYPE	LANE USE	STORAGE LENGTH (ft)	2019 EXISTING AM				2024 NO-BUILD AM				2024 BUILD AM				2024 BUILD WITH IMPROVEMENTS AM										
				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)	LANE USE	STORAGE LENGTH (ft)	LOS	DELAY (sec)	V/C RATIO	QUEUES (ft)	QUEUES (ft)	
							50th%	95th%				50th%	95th%				50th%	95th%						50th%	95th%	
River Road (route 3a)/ Lowell Road (route 3a) & Dracut Road & Steele Road	ACTUATED-COORDINATED	<b>Overall</b>		<b>B</b>	<b>20</b>	<b>0.83</b>			<b>B</b>	<b>19.4</b>	<b>0.82</b>			<b>B</b>	<b>17.3</b>	<b>0.83</b>			<b>Overall</b>		<b>B</b>	<b>17.4</b>	<b>0.86</b>			
		EB-L	±590'	D	40	0.03	2'	9'	D	40	0.02	1'	8'	D	40	0.02	1'	8'	EB-L	±590'	D	40	0.02	1'	8'	
		EB-RR	50'	A	0	0.01	0'	0'	A	0	0	0'	0'	A	0	0	0'	0'	EB-RR	50'	A	0	0	0'	0'	
		NB-L	200'	O	0	0	0'	0'	O	0	0	0'	0'	O	0	0	0'	0'	NB-L	200'	O	0	0	0'	0'	
		NB-TTR	±760'	C	30.6	0.34	71'	113'	C	31.6	0.35	73'	126'	C	33.4	0.4	78'	130'	NB-TTR	±760'	C	29.8	0.31	73'	133'	
		SB-L	775'	D	40.9	0.76	302'	364'	D	39.9	0.77	317'	#390'	C	31	0.77	215'	#435'	SB-LL	775'	C	27.8	0.44	134'	101'	
		SB-TTR	±1730'	A	3.6	0.21	110'	2'	A	3.6	0.23	122'	2'	A	1.1	0.23	3'	6'	SB-TR	±1730'	A	3.4	0.42	3'	8'	
		NWB-LL	100'	D	36	0	1'	5'	D	36	0	1'	5'	D	36	0	1'	5'	NWB-LL	100'	D	37	0.01	1'	5'	
NWB-R		B	14.8	0.83	184'	#227'	B	13.7	0.82	164'	#369'	B	14.1	0.83	169'	#481'	NWB-R		B	16	0.86	168'	#314'			
Lowell Road (route 3a) & Site Driveway/ Rena Avenue	ACTUATED-COORDINATED	<b>Overall</b>		<b>A</b>	<b>7.7</b>	<b>0.43</b>			<b>A</b>	<b>8.1</b>	<b>0.43</b>			<b>B</b>	<b>18.4</b>	<b>0.84</b>			<b>Overall</b>		<b>B</b>	<b>13.2</b>	<b>0.55</b>			
		EB-LT	±510'	D	38	0.03	2'	11'	D	37.7	0.03	2'	10'	E	67.4	0.84	115'	#249'	EB-LL		D	47.2	0.54	55'	#138'	
		EB-R	50'	A	0	0.02	0'	0'	A	0	0.01	0'	0'	A	0.5	0.1	0'	0'	EB-TR	±510'	A	0.3	0.07	0'	0'	
		WB-LTR	±560'	B	17.2	0.24	1'	28'	B	17.2	0.24	1'	31'	B	13.3	0.16	1'	28'	WB-LTR	±560'	C	20.4	0.29	1'	32'	
		NB-L	300'	D	40.9	0.13	9'	m16'	D	40.1	0.13	9'	m15'	D	42.5	0.3	29'	m40'	NB-L	300'	D	42.7	0.3	29'	m39'	
		NB-TTR	±1730'	A	3.8	0.43	98'	185'	A	3.9	0.43	101'	208'	A	9.4	0.55	142'	257'	NB-TTR	±1730'	A	10.2	0.55	195'	264'	
		SB-L	350'	C	25	0.06	4'	m10'	C	24.1	0.06	3'	m10'	C	30.1	0.05	4'	m8'	SB-L	350'	D	37.9	0.05	4'	m10'	
		SB-TTR	±980'	B	11.3	0.37	237'	169'	B	12	0.39	262'	192'	B	19.1	0.67	152'	259'	SB-TTTR	±980'	B	9.6	0.47	72'	73'	
Lowell Road (route 3a) & Sam's Club Driveway/ Walmart Driveway	ACTUATED-COORDINATED	<b>Overall</b>		<b>B</b>	<b>16.4</b>	<b>0.6</b>			<b>B</b>	<b>16.8</b>	<b>0.61</b>			<b>C</b>	<b>20.5</b>	<b>0.8</b>			<b>Overall</b>		<b>B</b>	<b>15</b>	<b>0.54</b>			
		EB-LL	175'	D	39.5	0.31	29'	54'	D	39.6	0.32	31'	56'	D	41.4	0.44	40'	69'	EB-LL	175'	D	47.4	0.54	41'	72'	
		EB-T	±400'	C	34.2	0.01	2'	12'	C	34.2	0.01	2'	12'	C	34	0.01	2'	12'	EB-T	±400'	D	36	0.01	2'	12'	
		EB-R	175'	A	0.8	0.15	0'	0'	A	0.8	0.16	0'	0'	A	0.8	0.15	0'	0'	EB-R	175'	A	1.7	0.11	0'	9'	
		WB-LL	150'	D	38.7	0.06	4'	14'	D	38.8	0.07	5'	15'	D	38.8	0.07	5'	15'	WB-LL	150'	D	38.8	0.07	5'	15'	
		WB-T	±450'	D	38.8	0.04	3'	15'	D	38.8	0.04	3'	15'	D	38.8	0.04	3'	15'	WB-T	±450'	D	38.2	0.04	3'	15'	
		WB-R	200'	A	2.4	0.28	0'	0'	A	2.5	0.29	0'	0'	A	2.5	0.29	0'	0'	WB-R	200'	A	4.2	0.2	0'	22'	
		NB-LL	350'	D	42.8	0.23	18'	44'	D	42.6	0.23	19'	46'	D	48.2	0.23	21'	m38'	NB-LL	350'	D	44.4	0.23	23'	m41'	
		NB-TT	±980'	B	13.7	0.6	244'	83'	B	14.3	0.61	254'	89'	B	19.7	0.8	336'	#550'	NB-TTTR	±980'	B	12.8	0.54	151'	143'	
		NB-R	175'	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	49	0.28	26'	m47'	D	48.5	0.28	26'	m41'	SB-LL	350'	D	47.5	0.29	26'	m38'	
SB-TT	±1190'	B	15.3	0.48	243'	325'	B	15.8	0.51	263'	348'	B	19.1	0.67	331'	426'	SB-TTT	±1190'	B	11.6	0.45	111'	251'			
SB-R		A	0.3	0.07	1'	m1'	A	0.3	0.07	1'	m1'	A	0.5	0.13	0'	m1'	SB-R	400'	A	0.5	0.1	0'	m0'			

**TABLE 4 Cont.**  
**OPENING YEAR CAPACITY ANALYSIS SUMMARY – WEEKDAY A.M. PEAK-HOUR**

INTERSECTION	CONTROL TYPE	LANE USE	STORAGE LENGTH (ft)	2019 EXISTING AM				2024 NO-BUILD AM				2024 BUILD AM				2024 BUILD WITH IMPROVEMENTS AM										
				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)	LANE USE	STORAGE LENGTH (ft)	LOS	DELAY (sec)	V/C RATIO	QUEUES (ft)	QUEUES (ft)	
							50th%	95th%				50th%	95th%				50th%	95th%						50th%	95th%	
Lowell Road (route 3a) & Sagamore Bridge Road	ACTUATED-COORDINATED	Overall		<b>C</b>	<b>26.7</b>	<b>1.01</b>			<b>C</b>	<b>26.1</b>	<b>1.09</b>			<b>D</b>	<b>49.2</b>	<b>1.35</b>			Overall		<b>B</b>	<b>15.9</b>	<b>0.86</b>			
		EB-LL	±930'	D	37	0.84	246'	#376'	D	38.7	0.87	285'	#447'	D	41.1	0.89	294'	#447'	EB-LL	±930'	C	34.4	0.84	276'	355'	
		EB-R		A	1.2	0.52	0'	0'	A	1.3	0.55	0'	0'	A	2.2	0.67	0'	0'	EB-R		A	2.2	0.67	0'	0'	
		NB-LL	525'	D	43.1	0.95	~214'	#407'	F	83.6	1.09	~312'	#439'	F	1.91	1.35	441'	#567'	NB-LLL	525'	C	26.2	0.86	215'	#250'	
		NB-TT	±1190'	A	2.8	0.18	8'	4'	A	3.2	0.2	7'	4'	A	3.3	0.22	5'	m5'	NB-TT	±1190'	A	4.5	0.23	17'	14'	
		SB-TT	±1000'	D	37.9	0.58	97'	133'	D	37.9	0.6	104'	142'	D	37.9	0.63	113'	156'	SB-TT	±1000'	C	34.7	0.8	116'	m129'	
		SB-R	200'	C	27.8	1.01	~11'	#267'	A	1	0.61	0'	0'	A	1	0.61	0'	0'	SB-RR	200'	A	4.5	0.61	106'	m108'	
Lowell Road (route 3a) & Flagstone Drive/ Wason Road	ACTUATED-UNCOORDINATED	Overall		<b>D</b>	<b>47.4</b>	<b>0.86</b>			<b>E</b>	<b>55.6</b>	<b>1.1</b>			<b>E</b>	<b>56.4</b>	<b>1.12</b>			Overall		<b>D</b>	<b>47.6</b>	<b>1.01</b>			
		EB-LT	±810'	F	85	0.33	32'	67'	F	85.6	0.61	97'	186'	F	87.4	0.62	98'	188'	EB-LT	±810'	F	89.1	0.83	58'	#148'	
		EB-R	250'	D	45.8	0.55	168'	247'	D	45.7	0.62	228'	403'	D	47.1	0.63	232'	411'	EB-R	250'	C	20.2	0.55	95'	179'	
		WB-L	200'	E	69.9	0.81	342'	490'	E	70.4	0.83	341'	550'	E	72	0.83	346'	562'	WB-L	200'	E	77	0.97	210'	#390'	
		WB-LT	±590'	E	69.3	0.8	342'	490'	E	70.6	0.83	346'	556'	E	72.2	0.84	351'	568'	WB-LT	±590'	E	77.5	0.97	213'	#397'	
		WB-R	75'	A	0.2	0.06	0'	0'	A	0.2	0.06	0'	0'	A	0.2	0.06	0'	0'	WB-R	75'	A	0.2	0.06	0'	0'	
		NB-L	575'	F	80.7	0.78	249'	#463'	F	137.8	1.1	~386'	#744'	F	143.9	1.12	~396'	#759'	NB-L	575'	F	93.3	1.01	~213'	m#333'	
		NB-TT	±1000'	C	25.7	0.44	282'	408'	C	32.8	0.53	323'	470'	C	33.1	0.54	345'	495'	NB-TT	±1000'	C	20.4	0.58	138'	210'	
		NB-R	275'	A	0.7	0.15	0'	17'	A	1	0.16	0'	22'	A	1	0.16	0'	22'	NB-RR	275'	A	0.1	0.1	0'	m0'	
		SB-L	175'	F	83.7	0.22	17'	48'	F	84.1	0.23	17'	52'	F	85.6	0.23	18'	53'	SB-L	175'	D	45.2	0.19	10'	32'	
SB-TTR	±1520'	D	51.2	0.86	559'	705'	D	50.1	0.76	387'	506'	D	50.3	0.76	406'	526'	SB-TTR	±430'	D	50.2	0.96	254'	#349'			
Lowell Road (route 3a) & Hampshire Drive/ Oblate Drive	ACTUATED-UNCOORDINATED	Overall		<b>B</b>	<b>12.6</b>	<b>0.64</b>			<b>B</b>	<b>11.3</b>	<b>0.64</b>			<b>B</b>	<b>11.3</b>	<b>0.65</b>										
		EB-LT	±500'	D	42.4	0.05	3'	22'	D	38.2	0.05	2'	22'	D	38.5	0.05	2'	22'								
		EB-R	100'	A	0.3	0.05	0'	0'	A	0.2	0.04	0'	0'	A	0.2	0.04	0'	0'								
		WB-LT	±380'	D	44.6	0.03	2'	16'	D	41.2	0.02	1'	14'	D	41.5	0.02	1'	14'								
		WB-R	100'	A	0	0.02	0'	0'	A	0	0.02	0'	0'	A	0	0.02	0'	0'								
		NB-L	225'	D	44.7	0.51	39'	#168'	D	39.4	0.5	35'	#190'	D	40	0.51	36'	#190'								
		NB-TTR	±1520'	A	5	0.26	0'	180'	A	4.2	0.28	0'	199'	A	4.3	0.29	0'	211'								
		SB-L	225'	D	47	0.02	1'	8'	D	42.5	0.02	1'	10'	D	43	0.02	1'	10'								
SB-TTR	±1790'	B	13.8	0.64	114'	378'	B	12.8	0.64	112'	428'	B	12.9	0.65	118'	448'										

TABLE 4 Cont.																										
OPENING YEAR CAPACITY ANALYSIS SUMMARY – WEEKDAY A.M. PEAK-HOUR																										
INTERSECTION	CONTROL TYPE	LANE USE	STORAGE LENGTH (ft)	2019 EXISTING AM					2024 NO-BUILD AM					2024 BUILD AM					2024 BUILD WITH IMPROVEMENTS AM							
				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)	LANE USE	STORAGE LENGTH (ft)	LOS	DELAY (sec)	V/C RATIO	QUEUES (ft)	QUEUES (ft)	
							50th%	95th%				50th%	95th%				50th%	95th%						50th%	95th%	
Lowell Road (route 3a) & Executive Drive	ACTUATED-UNCOORDINATED	Overall		<b>C</b>	<b>28.9</b>	<b>0.88</b>			<b>C</b>	<b>30.9</b>	<b>0.99</b>			<b>C</b>	<b>31.4</b>	<b>1.02</b>										
		EB-LT	±490'	D	41.2	0.34	22'	55'	D	48.3	0.41	22'	64'	D	50.1	0.43	23'	64'								
		EB-R	225'	A	3.1	0.03	0'	4'	A	4.7	0.04	0'	10'	A	4.7	0.04	0'	10'								
		WB-LT	±580'	E	56.7	0.79	112'	#217'	E	68	0.84	108'	#267'	E	71	0.86	112'	#267'								
		WB-R	80'	B	13.1	0.31	11'	50'	B	13.3	0.33	8'	61'	B	13.4	0.33	8'	61'								
		NB-L	350'	F	81.8	0.88	100'	#270'	F	106.7	0.99	~121'	#305'	F	113.1	1.02	~127'	#305'								
		NB-TTR	±1790'	B	13.3	0.3	84'	115'	B	12.2	0.31	87'	118'	B	12.3	0.32	95'	128'								
		SB-L	150'	E	59.6	0.66	65'	#167'	E	60.3	0.67	68'	#175'	E	62.2	0.68	70'	#175'								
SB-TTR	±1170'	C	21.6	0.76	295'	370'	C	20.5	0.77	310'	387'	C	20.7	0.78	325'	425'										
Lowell Road (route 3a) & Fox Hollow Drive/ Nottingham Square Driveway	ACTUATED-COORDINATED	Overall		<b>A</b>	<b>8.3</b>	<b>0.77</b>			<b>C</b>	<b>26.2</b>	<b>0.84</b>			<b>C</b>	<b>28.4</b>	<b>0.87</b>			Overall		<b>C</b>	<b>27.6</b>	<b>0.87</b>			
		EB-LT	±600'	E	72.8	0.25	12'	32'	F	98.4	0.28	15'	42'	F	98.4	0.28	15'	42'	EB-LT	±600'	F	98.4	0.28	15'	42'	
		EB-R	50'	C	22	0.49	0'	22'	B	10.4	0.39	0'	10'	B	10.4	0.39	0'	10'	EB-R	50'	B	10.4	0.39	0'	10'	
		WB-LT	±260'	E	66.2	0.13	7'	22'	F	89.2	0.14	8'	27'	F	89.2	0.14	8'	27'	WB-LT	±260'	F	89.2	0.14	8'	27'	
		WB-R	100'	A	9	0.07	0'	8'	A	0.5	0.06	0'	0'	A	0.5	0.06	0'	0'	WB-R	100'	A	0.5	0.06	0'	0'	
		NB-L	210'	E	64.2	0.08	3'	16'	F	89	0.08	5'	20'	F	89	0.08	5'	20'	NB-L	210'	F	89	0.08	5'	20'	
		NB-T	±1410'	A	3.7	0.36	111'	153'	A	7.9	0.41	148'	491'	A	8.3	0.43	164'	541'								
		NB-R	325'	A	0	0	0'	0'	A	0	0	0'	0'	A	0	0	0'	0'	NB-TTR	±1410'	A	5.6	0.23	67'	211'	
		SB-L	125'	E	73.3	0.31	15'	m17'	F	96.5	0.3	21'	52'	F	96.5	0.3	21'	52'	SB-L	125'	F	96.5	0.30	21'	52'	
SB-TR	±550'	A	7.6	0.77	160'	m913'	C	32.9	0.84	422'	#2136'	D	36.6	0.87	471'	#2229'	SB-TR	±550'	D	36.6	0.87	471'	#2229'			
Lowell Road (route 3a) & Pelham Road	ACTUATED-COORDINATED	Overall		<b>D</b>	<b>45.4</b>	<b>1.33</b>			<b>D</b>	<b>54.8</b>	<b>1.39</b>			<b>D</b>	<b>54.4</b>	<b>1.39</b>										
		WB-L	±510'	F	224.8	1.33	~280'	#441'	F	261.9	1.39	~434'	#636'	F	261.9	1.39	~434'	#636'								
		WB-R	75'	C	32.7	0.44	28'	79'	E	57.8	0.51	62'	129'	E	57.8	0.51	62'	129'								
		NB-TR	±550'	A	8.2	0.42	219'	104'	B	17.4	0.46	246'	590'	B	18.9	0.49	271'	648'								
		SB-L	150'	F	256.1	1.25	~68'	#167'	F	214.6	1.08	~94'	#213'	F	214.6	1.08	~94'	#213'								
SB-T	±1310'	A	9.4	0.7	335'	467'	B	17.2	0.76	519'	#1628'	B	18.1	0.79	564'	#1726'										

**TABLE 5  
OPENING YEAR CAPACITY ANALYSIS SUMMARY – WEEKDAY P.M. PEAK-HOUR**

INTERSECTION	CONTROL TYPE	LANE USE	STORAGE LENGTH (ft)	2019 EXISTING PM				2024 NO-BUILD PM				2024 BUILD PM				2024 BUILD WITH IMPROVEMENTS PM										
				LOS	DELAY (sec)	V/C RATIO	QUEUES (ft)		LOS	DELAY (sec)	V/C RATIO	QUEUES (ft)		LOS	DELAY (sec)	V/C RATIO	QUEUES (ft)		LANE USE	STORAGE LENGTH (ft)	LOS	DELAY (sec)	V/C RATIO	QUEUES (ft)		
							50th%	95th%				50th%	95th%				50th%	95th%						50th%	95th%	
River Road (route 3a)/ Lowell Road (route 3a) & Dracut Road & Steele Road	ACTUATED-COORDINATED	<b>Overall</b>		<b>E</b>	<b>66.2</b>	<b>1.24</b>			<b>E</b>	<b>73.3</b>	<b>1.28</b>			<b>E</b>	<b>77.8</b>	<b>1.33</b>			<b>Overall</b>		<b>C</b>	<b>22.6</b>	<b>0.79</b>			
		EB-L	±590'	E	64.1	0.43	33'	62'	E	60.7	0.35	31'	67'	E	60.7	0.35	31'	67'	EB-L	±590'	E	60.7	0.35	31'	67'	
		EB-RR	50'	A	0.2	0.02	0'	0'	A	0	0.01	0'	0'	A	0	0.01	0'	0'	EB-RR	50'	A	0	0.01	0'	0'	
		NB-L	200'	D	55	0.01	1'	7'	D	55	0.01	1'	7'	D	55	0.01	1'	7'	NB-L	200'	D	55	0.01	1'	7'	
		NB-TTR	±760'	E	55.4	0.82	238'	307'	E	58.5	0.87	262'	#352'	E	58.6	0.87	262'	#355'	NB-TTR	±760'	D	45	0.68	249'	#354'	
		SB-L	775'	F	140.6	1.24	~929'	#1186'	F	159.6	1.28	~967'	#1245'	F	172.8	1.33	~1009'	#1305'	SB-LL	775'	B	17.7	0.79	119'	71'	
		SB-TTR	±1730'	A	4.3	0.18	10'	58'	A	4.2	0.19	24'	72'	A	0.9	0.19	2'	m38'	SB-TR	±1730'	A	3.3	0.36	58'	162'	
		NWB-LL	100'	D	51	0.02	3'	15'	D	51	0.03	3'	15'	D	51	0.03	3'	15'	NWB-LL	100'	D	52	0.02	3'	15'	
NWB-R		B	13.4	0.67	131'	295'	B	14.5	0.69	147'	324'	B	16.2	0.73	172'	374'	NWB-R		B	19.1	0.78	195'	368'			
Lowell Road (route 3a) & Site Driveway/ Rena Avenue	ACTUATED-COORDINATED	<b>Overall</b>		<b>A</b>	<b>6.6</b>	<b>0.48</b>			<b>A</b>	<b>7</b>	<b>0.51</b>			<b>C</b>	<b>26.5</b>	<b>1.12</b>			<b>Overall</b>		<b>B</b>	<b>15.0</b>	<b>0.73</b>			
		EB-LT	±510'	E	61.9	0.47	45'	80'	E	61.7	0.46	44'	85'	F	132.5	1.12	~285'	#467'	EB-LL		E	60.5	0.73	120'	#190'	
		EB-R	50'	A	0.8	0.09	0'	0'	A	0.8	0.09	0'	0'	A	5.5	0.16	0'	24'	EB-TR	±510'	A	0.5	0.12	0'	0'	
		WB-LTR	±560'	A	0.9	0.09	0'	0'	A	0.8	0.09	0'	0'	A	0.5	0.07	0'	0'	WB-LTR	±560'	A	0.8	0.09	0'	0'	
		NB-L	300'	E	60.5	0.02	1'	m2'	E	64	0.02	1'	m1'	E	66.8	0.33	34'	m41'	NB-L	300'	E	65.2	0.33	34'	m45'	
		NB-TTR	±1730'	A	6.5	0.48	148'	226'	A	7	0.51	152'	240'	B	15.8	0.63	507'	612'	NB-TTR	±1730'	B	13.6	0.59	200'	617'	
		SB-L	350'	D	47	0.21	20'	m36'	D	47.2	0.22	20'	m36'	E	58	0.22	22'	m29'	SB-L	350'	E	67.9	0.22	22'	m44'	
		SB-TTR	±980'	A	3.6	0.45	80'	150'	A	4.1	0.48	73'	186'	B	14.6	0.82	101'	279'	SB-TTTR	±980'	A	6.0	0.53	79'	83'	
Lowell Road (route 3a) & Sam's Club Driveway/ Walmart Driveway	ACTUATED-COORDINATED	<b>Overall</b>		<b>C</b>	<b>28.1</b>	<b>0.79</b>			<b>C</b>	<b>29.3</b>	<b>0.84</b>			<b>D</b>	<b>40.8</b>	<b>1.04</b>			<b>Overall</b>		<b>C</b>	<b>26.5</b>	<b>0.9</b>			
		EB-LL	175'	D	54.8	0.61	107'	144'	D	54.7	0.62	110'	151'	E	55.6	0.66	119'	163'	EB-LL	175'	E	61.4	0.74	121'	170'	
		EB-T	±400'	D	43	0.06	10'	29'	D	42.8	0.06	11'	31'	D	41.9	0.06	11'	31'	EB-T	±400'	D	45.4	0.06	11'	32'	
		EB-R	175'	A	9.6	0.38	0'	44'	B	10.2	0.39	0'	51'	A	9.7	0.38	0'	51'	EB-R	175'	A	7.1	0.27	0'	47'	
		WB-LL	150'	E	55.1	0.36	39'	63'	E	55.1	0.36	39'	67'	E	55.1	0.36	39'	67'	WB-LL	150'	E	58.1	0.4	39'	69'	
		WB-T	±450'	D	51	0.14	17'	41'	D	51	0.14	17'	42'	D	50.7	0.14	17'	42'	WB-T	±450'	D	53.6	0.15	17'	44'	
		WB-R	200'	C	24.8	0.77	28'	101'	C	25.6	0.78	30'	121'	C	27.1	0.79	35'	128'	WB-R	200'	C	24.9	0.56	99'	190'	
		NB-LL	350'	E	70.5	0.37	44'	75'	E	70	0.38	47'	78'	E	58.1	0.38	43'	m64'	NB-LL	350'	E	63.5	0.61	43'	m#72'	
		NB-TT	±980'	C	22.3	0.79	278'	#643'	C	25.1	0.84	288'	#697'	E	56.4	1.04	~681'	m#882'	NB-TTTR	±980'	C	20.9	0.68	160'	259'	
		NB-R	175'	A	0.6	0.11	4'	0'	A	0.6	0.11	3'	0'	A	1.2	0.11	0'	M6'								
		SB-LL	350'	E	61.9	0.67	135'	156'	E	61.7	0.69	141'	164'	E	59.5	0.69	139'	m144'	SB-LL	350'	E	78.1	0.9	147'	m#176'	
SB-TT	±1190'	C	20.6	0.63	382'	511'	C	21.8	0.68	420'	550'	C	27.9	0.85	558'	#769'	SB-TTT	±1190'	B	13.6	0.53	169'	m249'			
SB-R		A	1.3	0.24	0'	m22'	A	1.6	0.25	0'	m24'	A	3.3	0.3	2'	M30'	SB-R	400'	A	0.2	0.21	0'	m0'			

**TABLE 5 Cont.**  
**OPENING YEAR CAPACITY ANALYSIS SUMMARY – WEEKDAY P.M. PEAK-HOUR**

INTERSECTION	CONTROL TYPE	LANE USE	STORAGE LENGTH (ft)	2019 EXISTING PM				2024 NO-BUILD PM				2024 BUILD PM				2024 BUILD WITH IMPROVEMENTS PM										
				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)	LANE USE	STORAGE LENGTH (ft)	LOS	DELAY (sec)	V/C RATIO	QUEUES (ft)	QUEUES (ft)	
							50th%	95th%				50th%	95th%				50th%	95th%						50th%	95th%	
Lowell Road (route 3a) & Sagamore Bridge Road	ACTUATED-COORDINATED	<b>Overall</b>		<b>D</b>	<b>44.8</b>	<b>1.17</b>			<b>E</b>	<b>55.1</b>	<b>1.23</b>			<b>E</b>	<b>79</b>	<b>1.48</b>			<b>Overall</b>		<b>D</b>	<b>40.1</b>	<b>1.09</b>			
		EB-LL	±930'	E	76	1.05	~665'	#804'	F	105.4	1.13	~752'	#889'	F	111.7	1.15	~752'	#889'	EB-LL	±930'	F	88.9	1.09	~714'	#851'	
		EB-R		A	2.5	0.71	0'	0'	A	3	0.75	0'	0'	A	7.8	0.88	0'	0'	EB-R		A	7.8	0.88	0'	0'	
		NB-LL	525'	F	114.5	1.17	~531'	#644'	F	138.6	1.23	~579'	#693'	F	246.1	1.48	~754'	m#756'	NB-LLL	525'	E	61.9	1.02	~401'	#495'	
		NB-TT	±1190'	A	9	0.35	146'	113'	A	9	0.37	143'	m123'	A	8.5	0.39	124'	m103'	NB-TT	±1190'	B	15.9	0.4	225'	245'	
		SB-TT	±1000'	D	54.6	0.75	184'	240'	E	55.9	0.78	197'	259'	E	58.9	0.83	219'	287'	SB-TT	±1000'	E	63.5	0.93	243'	m#344'	
		SB-R	200'	A	5.2	0.83	0'	0'	A	0.7	0.51	0'	0'	A	0.7	0.51	0'	0'	SB-RR	200'	A	2.2	0.51	74'	62'	
Lowell Road (route 3a) & Flagstone Drive/ Wason Road	ACTUATED-UNCOORDINATED	<b>Overall</b>		<b>D</b>	<b>42.6</b>	<b>0.85</b>			<b>D</b>	<b>49.5</b>	<b>0.89</b>			<b>D</b>	<b>50.4</b>	<b>0.89</b>			<b>Overall</b>		<b>C</b>	<b>33.7</b>	<b>0.82</b>			
		EB-LT	±810'	F	81.7	0.59	90'	165'	F	90.4	0.76	168'	#290'	F	91.7	0.76	170'	#290'	EB-LT	±810'	E	72.1	0.75	121'	195'	
		EB-R	250'	E	57.2	0.85	351'	#556'	E	62.8	0.88	458'	#746'	E	64.7	0.89	469'	#751'	EB-R	250'	D	37.9	0.79	282'	385'	
		WB-L	200'	E	57.2	0.61	207'	368'	D	53.6	0.56	236'	366'	D	54	0.56	243'	366'	WB-L	200'	E	68.5	0.82	203'	#352'	
		WB-LT	±590'	E	56.9	0.6	206'	366'	D	53.5	0.56	236'	366'	D	53.8	0.56	243'	366'	WB-LT	±590'	E	67.8	0.82	203'	#351'	
		WB-R	75'	A	0.2	0.05	0'	0'	A	0.2	0.05	0'	0'	A	0.2	0.05	0'	0'	WB-R	75'	A	0.2	0.06	0'	0'	
		NB-L	575'	E	61.1	0.26	66'	153'	E	69.7	0.51	156'	253'	E	70.2	0.51	158'	253'	NB-L	575'	E	58.9	0.46	124'	m141'	
		NB-TT	±1000'	D	39.3	0.71	416'	648'	D	51.4	0.83	578'	690'	D	53.4	0.86	608'	730'	NB-TT	±1000'	C	29.3	0.72	253'	m250'	
		NB-R	275'	B	17.2	0.84	423'	809'	C	26	0.89	658'	1028'	C	25.8	0.89	658'	1028'	NB-RR	275'	A	2.2	0.5	27'	m28'	
		SB-L	175'	F	85.7	0.57	72'	156'	F	90.9	0.59	86'	155'	F	91.8	0.6	87'	155'	SB-L	175'	E	76.1	0.64	62'	#129'	
SB-TTR	±1520'	D	51.8	0.81	406'	576'	D	52.3	0.7	354'	406'	D	53.1	0.73	372'	430'	SB-TTTR	±430'	D	39.9	0.66	260'	335'			
Lowell Road (route 3a) & Hampshire Drive/ Oblate Drive	ACTUATED-UNCOORDINATED	<b>Overall</b>		<b>B</b>	<b>13.6</b>	<b>0.58</b>			<b>B</b>	<b>13.4</b>	<b>0.57</b>			<b>B</b>	<b>13.3</b>	<b>0.58</b>										
		EB-LT	±500'	D	37.4	0.3	9'	43'	D	37.9	0.27	8'	47'	D	39.6	0.28	9'	48'								
		EB-R	100'	A	5.2	0.25	0'	24'	A	5.6	0.24	0'	34'	A	5.8	0.24	0'	35'								
		WB-LT	±380'	C	33	0.07	4'	22'	C	34.6	0.06	4'	25'	D	35.8	0.07	4'	26'								
		WB-R	100'	A	0	0.02	0'	0'	A	0	0.01	0'	0'	A	0	0.01	0'	0'								
		NB-L	225'	C	35	0.11	5'	30'	D	36.4	0.12	5'	33'	D	37.7	0.13	6'	34'								
		NB-TTR	±1520'	B	11.4	0.53	83'	293'	B	11.4	0.56	88'	321'	B	11.3	0.58	95'	337'								
		SB-L	225'	D	35.2	0.04	2'	15'	D	36.8	0.04	2'	16'	D	38	0.04	2'	17'								
SB-TTR	±1790'	B	15.9	0.58	104'	226'	B	15.1	0.57	112'	258'	B	15	0.58	121'	275'										



TABLE 5 Cont.																										
OPENING YEAR CAPACITY ANALYSIS SUMMARY – WEEKDAY P.M. PEAK-HOUR																										
INTERSECTION	CONTROL TYPE	LANE USE	STORAGE LENGTH (ft)	2019 EXISTING PM					2024 NO-BUILD PM					2024 BUILD PM					2024 BUILD WITH IMPROVEMENTS PM							
				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)	LANE USE	STORAGE LENGTH (ft)	LOS	DELAY (sec)	V/C RATIO	QUEUES (ft)	QUEUES (ft)	
							50th%	95th%				50th%	95th%				50th%	95th%						50th%	95th%	
Lowell Road (route 3a) & Executive Drive	ACTUATED-UNCOORDINATED	Overall		B	19	0.68			B	19.3	0.68			B	19.5	0.69										
		EB-LT	±490'	C	33.9	0.68	94'	#226'	D	35.6	0.68	96'	#273'	D	37.1	0.69	99'	#284'								
		EB-R	225'	A	3.4	0.1	0'	19'	A	3.7	0.1	0'	26'	A	3.9	0.1	0'	28'								
		WB-LT	±580'	C	21.9	0.12	9'	31'	C	23.5	0.11	9'	34'	C	24.5	0.12	9'	35'								
		WB-R	80'	A	0.3	0.07	0'	0'	A	0.3	0.07	0'	0'	A	0.3	0.07	0'	0'								
		NB-L	350'	C	34.8	0.3	19'	58'	D	37.3	0.35	24'	68'	D	38.4	0.36	25'	69'								
		NB-TTR	±1790'	B	14.7	0.59	126'	249'	B	14.5	0.6	137'	270'	B	14.5	0.61	146'	284'								
		SB-L	150'	C	34	0.12	6'	28'	D	35.8	0.14	7'	29'	D	36.9	0.14	7'	31'								
		SB-TTR	±1170'	C	20.4	0.61	126'	186'	C	20.5	0.63	147'	213'	C	20.6	0.65	159'	227'								
Lowell Road (route 3a) & Fox Hollow Drive/ Nottingham Square Driveway	ACTUATED-COORDINATED	Overall		C	28.9	1.09			C	24.3	0.84			C	25.6	0.87			Overall		B	17.5	0.71			
		EB-LT	±600'	E	71.6	0.24	12'	31'	F	88.9	0.19	14'	39'	F	88.9	0.19	14'	39'	EB-LT	±600'	F	88.9	0.19	14'	39'	
		EB-R	50'	A	5	0.25	0'	0'	A	2.6	0.18	0'	0'	A	2.6	0.18	0'	0'	EB-R	50'	A	2.6	0.18	0'	0'	
		WB-LT	±260'	F	106	0.65	33'	#77'	F	115.7	0.57	44'	89'	F	115.7	0.57	44'	89'	WB-LT	±260'	F	115.7	0.57	44'	89'	
		WB-R	100'	B	16.6	0.29	0'	33'	B	16.9	0.23	0'	46'	B	16.9	0.23	0'	46'	WB-R	100'	B	16.9	0.23	0'	46'	
		NB-L	210'	F	93.3	0.51	23'	#67'	F	104.3	0.44	33'	71'	F	104.3	0.44	33'	71'	NB-L	210'	F	104.3	0.44	33'	71'	
		NB-T	±1410'	C	32.2	0.76	409'	591'	C	22.5	0.84	744'	#1842'	C	24.6	0.87	830'	#1948'								
		NB-R	325'	A	0	0.01	0'	0'	A	0	0.01	0'	0'	A	0	0.01	0'	0'	NB-TTR	±1410'	A	9.7	0.47	220'	530'	
		SB-L	125'	F	199.3	1.09	~57'	#154'	F	121.8	0.71	74'	#144'	F	121.8	0.71	74'	#144'	SB-L	125'	F	121.8	0.71	74'	#144'	
SB-TR	±550'	A	3.7	0.43	125'	165'	B	12.4	0.48	226'	678'	B	13.3	0.51	251'	750'	SB-TR	±550'	B	13.3	0.51	251'	750'			
Lowell Road (route 3a) & Pelham Road	ACTUATED-COORDINATED	Overall		E	60.1	2.18			E	72.8	1.88			E	72.7	1.88										
		WB-L	±510'	E	78.7	0.66	79'	130'	F	114.1	0.72	121'	188'	F	114.1	0.72	121'	188'								
		WB-R	75'	B	18.2	0.6	4'	67'	C	23.4	0.64	10'	99'	C	23.4	0.64	10'	99'								
		NB-TR	±550'	D	41.2	0.82	897'	1171'	E	73.3	0.87	843'	#2089'	E	75.1	0.9	937'	#2207'								
		SB-L	150'	F	614.7	2.18	~162'	#286'	F	487.8	1.88	~235'	#390'	F	487.8	1.88	~235'	#390'								
SB-T	±1310'	A	4.4	0.45	131'	207'	A	8.6	0.48	174'	657'	A	9.1	0.51	193'	730'										

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

INTERSECTION	CONTROL TYPE	LANE USE	STORAGE LENGTH (ft)	2019 EXISTING AM				2034 NO-BUILD AM				2034 BUILD AM				2034 BUILD WITH IMPROVEMENTS AM										
				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)	LANE USE	STORAGE LENGTH (ft)	LOS	DELAY (sec)	V/C RATIO	QUEUES (ft)	QUEUES (ft)	
							50th%	95th%				50th%	95th%				50th%	95th%						50th%	95th%	50th%
River Road (route 3a)/ Lowell Road (route 3a) & Dracut Road & Steele Road	ACTUATED-COORDINATED	<b>Overall</b>		<b>B</b>	<b>20</b>	<b>0.83</b>			<b>B</b>	<b>17.8</b>	<b>0.83</b>			<b>B</b>	<b>16.6</b>	<b>0.85</b>			<b>Overall</b>		<b>B</b>	<b>15.5</b>	<b>0.83</b>			
		EB-L	±590'	D	40	0.03	2'	9'	D	40	0.02	1'	8'	D	40	0.02	1'	8'	EB-L	±590'	D	40	0.02	1'	8'	
		EB-RR	50'	A	0	0.01	0'	0'	A	0	0	0'	0'	A	0	0	0'	0'	EB-RR	50'	A	0	0	0'	0'	
		NB-L	200'	0	0	0	0'	0'	0	0	0	0'	0'	0	0	0	0'	0'	NB-L	200'	0	0	0	0'	0'	
		NB-TTR	±760'	C	30.6	0.34	71'	113'	D	42.1	0.64	94'	138'	D	42.3	0.65	96'	142'	NB-TTR	±760'	D	46.2	0.71	99'	#147'	
		SB-L	775'	D	40.9	0.76	302'	364'	C	26.9	0.68	267'	#474'	C	20.7	0.71	155'	#506'	SB-LL	775'	B	14.8	0.35	95'	102'	
		SB-TTR	±1730'	A	3.6	0.21	110'	2'	A	3	0.25	132'	2'	A	0.7	0.25	3'	6'	SB-TR	±1730'	A	3.3	0.46	4'	9'	
		NWB-LL	100'	D	36	0	1'	5'	D	36	0	1'	5'	D	36	0	1'	5'	NWB-LL	100'	D	37	0.01	1'	5'	
NWB-R		B	14.8	0.83	184'	#227'	B	14	0.83	156'	#750'	B	15.6	0.85	177'	#787'	NWB-R		B	13.2	0.83	128'	#755'			
Lowell Road (route 3a) & Site Driveway/ Rena Avenue	ACTUATED-COORDINATED	<b>Overall</b>		<b>A</b>	<b>7.7</b>	<b>0.43</b>			<b>A</b>	<b>7.6</b>	<b>0.47</b>			<b>B</b>	<b>18.9</b>	<b>0.85</b>			<b>Overall</b>		<b>B</b>	<b>13.0</b>	<b>0.61</b>			
		EB-LT	±510'	D	38	0.03	2'	11'	D	37.7	0.03	2'	10'	E	69	0.85	115'	#249'	EB-LL		D	51.7	0.61	59'	#138'	
		EB-R	50'	A	0	0.02	0'	0'	A	0	0.01	0'	0'	A	0.5	0.1	0'	0'	EB-TR	±510'	A	0.3	0.08	0'	0'	
		WB-LTR	±560'	B	17.2	0.24	1'	28'	B	17	0.25	1'	32'	B	13.1	0.17	1'	29'	WB-LTR	±560'	C	20.4	0.3	1'	34'	
		NB-L	300'	D	40.9	0.13	9'	m16'	D	40.6	0.13	10'	m14'	D	41.6	0.31	30'	m35'	NB-L	300'	D	41.7	0.31	29'	m35'	
		NB-TTR	±1730'	A	3.8	0.43	98'	185'	A	4.2	0.47	132'	253'	A	9.6	0.61	162'	288'	NB-TTR	±1730'	A	9.6	0.60	166'	448'	
		SB-L	350'	C	25	0.06	4'	m10'	C	24.5	0.06	4'	m9'	C	29.6	0.06	5'	m8'	SB-L	350'	D	38	0.06	5'	m10'	
		SB-TTR	±980'	B	11.3	0.37	237'	169'	B	10.5	0.44	251'	235'	C	20.5	0.72	195'	301'	SB-TTR	±980'	B	9.7	0.49	58'	102'	
Lowell Road (route 3a) & Sam's Club Driveway/ Walmart Driveway	ACTUATED-COORDINATED	<b>Overall</b>		<b>B</b>	<b>16.4</b>	<b>0.6</b>			<b>B</b>	<b>18.8</b>	<b>0.74</b>			<b>C</b>	<b>23</b>	<b>0.88</b>			<b>Overall</b>		<b>B</b>	<b>15.9</b>	<b>0.63</b>			
		EB-LL	175'	D	39.5	0.31	29'	54'	D	39.8	0.35	35'	61'	D	41.9	0.46	43'	73'	EB-LL	175'	D	48.9	0.59	44'	76'	
		EB-T	±400'	C	34.2	0.01	2'	12'	C	34.2	0.02	2'	13'	C	33.8	0.02	2'	13'	EB-T	±400'	D	35.8	0.02	2'	13'	
		EB-R	175'	A	0.8	0.15	0'	0'	A	0.9	0.17	0'	0'	A	0.9	0.17	0'	0'	EB-R	175'	A	2.4	0.12	0'	13'	
		WB-LL	150'	D	38.7	0.06	4'	14'	D	38.8	0.07	5'	15'	D	38.8	0.07	5'	15'	WB-LL	150'	D	38.8	0.07	5'	15'	
		WB-T	±450'	D	38.8	0.04	3'	15'	D	39	0.05	4'	17'	D	39	0.05	4'	17'	WB-T	±450'	D	38.2	0.05	4'	17'	
		WB-R	200'	A	2.4	0.28	0'	0'	A	2.8	0.31	0'	0'	A	2.8	0.31	0'	0'	WB-R	200'	A	5.2	0.21	0'	27'	
		NB-LL	350'	D	42.8	0.23	18'	44'	D	44.6	0.25	18'	49'	D	47.3	0.25	23'	m39'	NB-LL	350'	D	44	0.25	24'	m42'	
		NB-TT	±980'	B	13.7	0.6	244'	83'	B	17	0.74	280'	#502'	C	23.6	0.88	~377'	#642'	NB-TTTR	±980'	B	14.1	0.63	197'	175'	
		NB-R	175'	A	0.1	0.03	0'	m0'	A	0.1	0.04	0'	m0'	A	0.1	0.04	0'	m0'								
		SB-LL	350'	D	48.8	0.27	25'	46'	D	48.8	0.3	29'	m48'	D	48.1	0.3	29'	m42'	SB-LL	350'	D	47.5	0.31	29'	m38'	
SB-TT	±1190'	B	15.3	0.48	243'	325'	B	17.7	0.62	301'	393'	C	21.1	0.74	374'	#507'	SB-TTT	±1190'	B	12.2	0.49	124'	m271'			
SB-R		A	0.3	0.07	1'	m1'	A	0.3	0.08	0'	m1'	A	0.5	0.14	0'	m1'	SB-R	400'	A	0.5	0.11	0'	m0'			

**TABLE 6 Cont.**  
**HORIZON YEAR CAPACITY ANALYSIS SUMMARY – WEEKDAY A.M. PEAK-HOUR**

INTERSECTION	CONTROL TYPE	LANE USE	STORAGE LENGTH (ft)	2019 EXISTING AM				2034 NO-BUILD AM				2034 BUILD AM				2034 BUILD WITH IMPROVEMENTS AM										
				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)	LANE USE	STORAGE LENGTH (ft)	LOS	DELAY (sec)	V/C RATIO	QUEUES (ft)	QUEUES (ft)	
							50th%	95th%				50th%	95th%				50th%	95th%						50th%	95th%	
Lowell Road (route 3a) & Sagamore Bridge Road	ACTUATED-COORDINATED	Overall		<b>C</b>	<b>26.7</b>	<b>1.01</b>			<b>D</b>	<b>39.2</b>	<b>1.23</b>			<b>E</b>	<b>63.9</b>	<b>1.48</b>			Overall		<b>B</b>	<b>19.7</b>	<b>0.96</b>			
		EB-LL	±930'	D	37	0.84	246'	#376'	D	53.3	0.98	337'	#514'	E	59.7	1	~368'	#514'	EB-LL	±930'	D	39	0.9	317'	#439'	
		EB-R		A	1.2	0.52	0'	0'	A	1.6	0.61	0'	0'	A	2.9	0.73	0'	0'	EB-R		A	2.9	0.73	0'	0'	
		NB-LL	525'	D	43.1	0.95	~214'	#407'	F	139.2	1.23	~385'	#505'	F	248.2	1.48	~508'	m#618'	NB-LLL	525'	C	34.7	0.92	260'	#332'	
		NB-TT	±1190'	A	2.8	0.18	8'	4'	A	3	0.22	4'	m4'	A	2.8	0.24	4'	m6'	NB-TT	±1190'	A	3.9	0.26	16'	16'	
		SB-TT	±1000'	D	37.9	0.58	97'	133'	D	37.9	0.63	113'	156'	D	38.1	0.66	124'	171'	SB-TT	±1000'	D	44.1	0.96	130'	m131'	
		SB-R	200'	C	27.8	1.01	~11'	#267'	A	1.3	0.68	0'	0'	A	1.3	0.68	0'	0'	SB-RR	200'	A	6.2	0.68	128'	m114'	
Lowell Road (route 3a) & Flagstone Drive/ Wason Road	ACTUATED-UNCOORDINATED	Overall		<b>D</b>	<b>47.4</b>	<b>0.86</b>			<b>E</b>	<b>65.2</b>	<b>1.29</b>			<b>E</b>	<b>66.2</b>	<b>1.31</b>			Overall		<b>E</b>	<b>61.5</b>	<b>1.08</b>			
		EB-LT	±810'	F	85	0.33	32'	67'	F	93.3	0.65	113'	192'	F	94.4	0.65	115'	192'	EB-LT	±810'	F	93.5	0.85	60'	#153'	
		EB-R	250'	D	45.8	0.55	168'	247'	D	54.4	0.7	297'	452'	E	55.6	0.71	302'	452'	EB-R	250'	C	21.7	0.59	108'	198'	
		WB-L	200'	E	69.9	0.81	342'	490'	E	77.5	0.87	421'	#676'	E	79.2	0.88	427'	#676'	WB-L	200'	F	102.4	1.07	~260'	#444'	
		WB-LT	±590'	E	69.3	0.8	342'	490'	E	77.6	0.88	426'	#681'	E	79.4	0.88	433'	#681'	WB-LT	±590'	F	102.7	1.07	~264'	#449'	
		WB-R	75'	A	0.2	0.06	0'	0'	A	0.2	0.07	0'	0'	A	0.2	0.07	0'	0'	WB-R	75'	A	0.2	0.07	0'	0'	
		NB-L	575'	F	80.7	0.78	249'	#463'	F	206.3	1.29	~532'	#832'	F	213.9	1.31	~542'	#832'	NB-L	575'	F	110.3	1.08	~245'	m#335'	
		NB-TT	±1000'	C	25.7	0.44	282'	408'	D	35.5	0.58	420'	533'	D	36	0.59	444'	561'	NB-TT	±1000'	C	22	0.63	170'	m217'	
		NB-R	275'	A	0.7	0.15	0'	17'	A	1	0.18	0'	23'	A	1	0.17	0'	23'	NB-RR	275'	A	0.1	0.11	0'	m0'	
		SB-L	175'	F	83.7	0.22	17'	48'	F	89.6	0.25	21'	55'	F	90.6	0.26	21'	55'	SB-L	175'	D	45.5	0.2	11'	33'	
SB-TTR	±1520'	D	51.2	0.86	559'	705'	D	53.1	0.79	487'	571'	D	53.4	0.8	509'	593'	SB-TTR	±430'	E	72.8	1.05	~312'	#406'			
Lowell Road (route 3a) & Hampshire Drive/ Oblate Drive	ACTUATED-UNCOORDINATED	Overall		<b>B</b>	<b>12.6</b>	<b>0.64</b>			<b>B</b>	<b>13.3</b>	<b>0.69</b>			<b>B</b>	<b>13.4</b>	<b>0.7</b>										
		EB-LT	±500'	D	42.4	0.05	3'	22'	D	44.1	0.06	4'	24'	D	44.3	0.06	4'	24'								
		EB-R	100'	A	0.3	0.05	0'	0'	A	0.3	0.05	0'	0'	A	0.3	0.05	0'	0'								
		WB-LT	±380'	D	44.6	0.03	2'	16'	D	46.8	0.03	2'	14'	D	47	0.03	2'	14'								
		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	47.7	0.58	54'	#213'	D	48.4	0.58	57'	#213'								
		NB-TTR	±1520'	A	5	0.26	0'	180'	A	5.1	0.31	0'	225'	A	5.2	0.33	0'	238'								
		SB-L	225'	D	47	0.02	1'	8'	D	48.5	0.02	1'	10'	D	48.5	0.02	1'	10'								
SB-TTR	±1790'	B	13.8	0.64	114'	378'	B	14.9	0.69	146'	502'	B	15.2	0.7	153'	525'										

TABLE 6 Cont.																										
HORIZON YEAR CAPACITY ANALYSIS SUMMARY – WEEKDAY A.M. PEAK-HOUR																										
INTERSECTION	CONTROL TYPE	LANE USE	STORAGE LENGTH (ft)	2019 EXISTING AM					2034 NO-BUILD AM					2034 BUILD AM					2034 BUILD WITH IMPROVEMENTS AM							
				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)	LANE USE	STORAGE LENGTH (ft)	LOS	DELAY (sec)	V/C RATIO	QUEUES (ft)	QUEUES (ft)	
							50th%	95th%				50th%	95th%				50th%	95th%						50th%	95th%	
Lowell Road (route 3a) & Executive Drive	ACTUATED-UNCOORDINATED	Overall		<b>C</b>	<b>28.9</b>	<b>0.88</b>			<b>D</b>	<b>38.7</b>	<b>1.2</b>			<b>D</b>	<b>39.3</b>	<b>1.21</b>			Overall		<b>D</b>	<b>36.2</b>	<b>0.92</b>			
		EB-LT	±490'	D	41.2	0.34	22'	55'	D	54.8	0.48	28'	71'	E	56.8	0.5	29'	71'	EB-LT	±490'	D	47	0.39	30'	68'	
		EB-R	225'	A	3.1	0.03	0'	4'	A	5.1	0.04	0'	10'	A	5.1	0.04	0'	10'	EB-R	225'	A	3.7	0.03	0'	9'	
		WB-LT	±580'	E	56.7	0.79	112'	#217'	F	84	0.92	137'	#292'	F	87.1	0.94	142'	#292'	WB-LT	±580'	E	70.2	0.85	146'	#269'	
		WB-R	80'	B	13.1	0.31	11'	50'	B	15.2	0.36	15'	70'	B	15.3	0.36	16'	70'	WB-R	80'	B	13.7	0.33	15'	66'	
		NB-L	350'	F	81.8	0.88	100'	#270'	F	170.3	1.2	~168'	#345'	F	177.6	1.21	~176'	#345'	NB-L	350'	E	70.4	0.84	146'	#268'	
		NB-TTR	±1790'	B	13.3	0.3	84'	115'	B	12.5	0.33	98'	139'	B	12.6	0.34	106'	150'	NB-TTR	±1790'	B	15.8	0.36	129'	182'	
		SB-L	150'	E	59.6	0.66	65'	#167'	E	74	0.78	84'	#203'	E	76.2	0.79	87'	#203'	SB-L	150'	E	60.2	0.67	92'	152'	
SB-TTR	±1170'	C	21.6	0.76	295'	370'	C	22.1	0.81	367'	482'	C	22.6	0.82	385'	506'	SB-TTR	±1170'	C	34.7	0.92	505'	#676'			
Lowell Road (route 3a) & Fox Hollow Drive/ Nottingham Square Driveway	ACTUATED-COORDINATED	Overall		<b>A</b>	<b>8.3</b>	<b>0.77</b>			<b>D</b>	<b>45.6</b>	<b>0.95</b>			<b>D</b>	<b>49</b>	<b>0.98</b>			Overall		<b>D</b>	<b>47.9</b>	<b>0.98</b>			
		EB-LT	±600'	E	72.8	0.25	12'	32'	F	100.2	0.3	17'	45'	F	100.2	0.3	17'	45'	EB-LT	±600'	F	100.2	0.3	17'	45'	
		EB-R	50'	C	22	0.49	0'	22'	B	13.6	0.43	0'	20'	B	13.6	0.43	0'	20'	EB-R	50'	B	13.6	0.43	0'	20'	
		WB-LT	±260'	E	66.2	0.13	7'	22'	F	90.1	0.16	9'	30'	F	90.1	0.16	9'	30'	WB-LT	±260'	F	90.1	0.16	9'	30'	
		WB-R	100'	A	9	0.07	0'	8'	A	0.5	0.06	0'	0'	A	0.5	0.06	0'	0'	WB-R	100'	A	0.5	0.06	0'	0'	
		NB-L	210'	E	64.2	0.08	3'	16'	F	89.8	0.1	6'	23'	F	89.8	0.1	6'	23'	NB-L	210'	F	89.8	0.1	6'	23'	
		NB-T	±1410'	A	3.7	0.36	111'	153'	A	9.3	0.46	174'	571'	A	9.8	0.49	191'	628'								
		NB-R	325'	A	0	0	0'	0'	A	0	0	0'	0'	A	0	0	0'	0'	NB-TTR	±1410'	A	6.4	0.26	76'	236'	
SB-L	125'	E	73.3	0.31	15'	m17'	F	97.4	0.32	24'	57'	F	97.4	0.32	24'	57'	SB-L	125'	F	97.4	0.32	24'	57'			
SB-TR	±550'	A	7.6	0.77	160'	m913'	E	61.6	0.95	653'	#2481'	E	67.1	0.98	750'	#2569'	SB-TR	±550'	E	67.1	0.98	750'	#2569'			
Lowell Road (route 3a) & Pelham Road	ACTUATED-COORDINATED	Overall		<b>D</b>	<b>45.4</b>	<b>1.33</b>			<b>E</b>	<b>65.4</b>	<b>1.54</b>			<b>E</b>	<b>65.3</b>	<b>1.54</b>										
		WB-L	±510'	F	224.8	1.33	~280'	#441'	F	318.3	1.54	~506'	#716'	F	318.3	1.54	~506'	#716'								
		WB-R	75'	C	32.7	0.44	28'	79'	E	62.7	0.56	72'	144'	E	62.7	0.56	72'	144'								
		NB-TR	±550'	A	8.2	0.42	219'	104'	B	19.8	0.51	286'	683'	C	21.7	0.53	313'	745'								
		SB-L	150'	F	256.1	1.25	~68'	#167'	F	243.1	1.19	~112'	#236'	F	243.1	1.19	~112'	#236'								
SB-T	±1310'	A	9.4	0.7	335'	467'	C	20.7	0.84	679'	#1925'	C	22.3	0.87	744'	#2018'										

TABLE 7 HORIZON YEAR CAPACITY ANALYSIS SUMMARY – WEEKDAY P.M. PEAK-HOUR																									
INTERSECTION	CONTROL TYPE	LANE USE	STORAGE LENGTH (ft)	2019 EXISTING PM				2034 NO-BUILD PM				2034 BUILD PM				2034 BUILD WITH IMPROVEMENTS PM									
				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)	LANE USE	STORAGE LENGTH (ft)	LOS	DELAY (sec)	V/C RATIO	QUEUES (ft)	QUEUES (ft)
							50th%	95th%				50th%	95th%				50th%	95th%						50th%	95th%
River Road (route 3a)/ Lowell Road (route 3a) & Dracut Road & Steele Road	ACTUATED-COORDINATED	Overall		E	66.2	1.24			F	97.6	1.43			F	103.2	1.47			Overall		C	26	0.85		
		EB-L	±590'	E	64.1	0.43	33'	62'	E	61.1	0.38	35'	72'	E	61.1	0.38	35'	72'	EB-L	±590'	E	61.1	0.38	35'	72'
		EB-RR	50'	A	0.2	0.02	0'	0'	A	0	0.01	0'	0'	A	0	0.01	0'	0'	EB-RR	50'	A	0	0.01	0'	0'
		NB-L	200'	D	55	0.01	1'	7'	D	55	0.01	1'	7'	D	55	0.01	1'	7'	NB-L	200'	D	55	0.01	1'	7'
		NB-TTR	±760'	E	55.4	0.82	238'	307'	E	64.7	0.92	291'	#405'	E	66.6	0.94	295'	#413'	NB-TTR	±760'	D	50.1	0.79	295'	#413'
		SB-L	775'	F	140.6	1.24	~929'	#1186'	F	222	1.43	~1120'	#1421'	F	236.7	1.47	~1184'	m#1448'	SB-LL	775'	B	19.7	0.83	120'	248'
		SB-TTR	±1730'	A	4.3	0.18	10'	58'	A	4.5	0.21	34'	95'	A	0.9	0.21	3'	m42'	SB-TR	±1730'	A	3	0.4	65'	176'
		NWB-LL	100'	D	51	0.02	3'	15'	D	51.2	0.03	4'	17'	D	51.2	0.03	4'	17'	NWB-LL	100'	D	52.2	0.03	4'	17'
NWB-R		B	13.4	0.67	131'	295'	B	19.8	0.78	229'	#332'	C	22.1	0.81	267'	#436'	NWB-R		C	25.2	0.85	263'	#406'		
Lowell Road (route 3a) & Site Driveway/ Rena Avenue	ACTUATED-COORDINATED	Overall		A	6.6	0.48			A	8.8	0.56			C	29.4	1.14			Overall		B	15.5	0.78		
		EB-LT	±510'	E	61.9	0.47	45'	80'	E	62.1	0.48	48'	90'	F	140.6	1.14	~295'	#479'	EB-LL		E	64.7	0.78	128'	#195'
		EB-R	50'	A	0.8	0.09	0'	0'	A	0.8	0.1	0'	0'	A	6	0.16	0'	25'	EB-TR	±510'	A	0.5	0.13	0'	0'
		WB-LTR	±560'	A	0.9	0.09	0'	0'	A	0.8	0.09	0'	0'	A	0.5	0.07	0'	0'	WB-LTR	±560'	A	0.9	0.10	0'	0'
		NB-L	300'	E	60.5	0.02	1'	m2'	E	64	0.02	1'	m1'	E	64.5	0.33	34'	m37'	NB-L	300'	E	63.1	0.33	33'	m40'
		NB-TTR	±1730'	A	6.5	0.48	148'	226'	A	8.9	0.56	212'	m637'	B	17.7	0.7	574'	m691'	NB-TTR	±1730'	B	14.9	0.64	232'	702'
		SB-L	350'	D	47	0.21	20'	m36'	D	47.1	0.24	25'	m35'	E	56.4	0.24	24'	m30'	SB-L	350'	E	67.3	0.24	25'	m45'
		SB-TTR	±980'	A	3.6	0.45	80'	150'	A	5.9	0.53	92'	219'	B	19.2	0.89	218'	m#326'	SB-TTTR	±980'	A	5.9	0.57	73'	93'
Lowell Road (route 3a) & Sam's Club Driveway/ Walmart Driveway	ACTUATED-COORDINATED	Overall		C	28.1	0.79			D	37	0.99			E	65.5	1.2			Overall		C	29	1.01		
		EB-LL	175'	D	54.8	0.61	107'	144'	E	55.1	0.65	122'	166'	E	56.2	0.69	130'	179'	EB-LL	175'	E	64.6	0.79	134'	#196'
		EB-T	±400'	D	43	0.06	10'	29'	D	41.7	0.06	11'	32'	D	41.3	0.05	11'	32'	EB-T	±400'	D	45.4	0.06	12'	34'
		EB-R	175'	A	9.6	0.38	0'	44'	B	10	0.39	0'	57'	A	9.8	0.38	0'	57'	EB-R	175'	A	9	0.29	6'	59'
		WB-LL	150'	E	55.1	0.36	39'	63'	E	55.2	0.38	43'	72'	E	55.2	0.38	43'	72'	WB-LL	150'	E	59	0.44	43'	74'
		WB-T	±450'	D	51	0.14	17'	41'	D	49.6	0.14	18'	47'	D	49.8	0.14	18'	47'	WB-T	±450'	D	53.9	0.17	19'	49'
		WB-R	200'	C	24.8	0.77	28'	101'	C	33.4	0.83	57'	#190'	D	35.5	0.84	61'	#198'	WB-R	200'	C	28.3	0.61	122'	224'
		NB-LL	350'	E	70.5	0.37	44'	75'	E	69	0.4	52'	85'	E	57.6	0.4	47'	m65'	NB-LL	350'	E	65.5	0.66	48'	m#81'
		NB-TT	±980'	C	22.3	0.79	278'	#643'	D	43.9	0.99	~663'	#817'	F	122	1.2	~880'	m#1000'	NB-TTTR	±980'	C	22.6	0.74	164'	305'
		NB-R	175'	A	0.6	0.11	4'	0'	A	1.2	0.13	0'	8'	A	2.7	0.13	1'	m9'	SB-LL	350'					
		SB-LL	350'	E	61.9	0.67	135'	156'	E	60	0.74	142'	m168'	E	57.8	0.74	139'	m146'			F	90.6	1.01	~173'	m#182'
SB-TT	±1190'	C	20.6	0.63	382'	511'	C	26.4	0.78	503'	#652'	D	35.9	0.96	~674'	m#820'	SB-TTT	±1190'	B	14.6	0.58	233'	m259'		
SB-R		A	1.3	0.24	0'	m22'	A	2.4	0.29	0'	m26'	A	4.2	0.34	9'	m31'	SB-R	400'	A	0.2	0.23	0'	m0'		

TABLE 7 Cont.

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

INTERSECTION	CONTROL TYPE	LANE USE	STORAGE LENGTH (ft)	2019 EXISTING PM				2034 NO-BUILD PM				2034 BUILD PM				2034 BUILD WITH IMPROVEMENTS PM									
				LOS	DELAY (sec)	V/C RATIO	QUEUES (ft)		LOS	DELAY (sec)	V/C RATIO	QUEUES (ft)		LOS	DELAY (sec)	V/C RATIO	QUEUES (ft)		LANE USE	STORAGE LENGTH (ft)	LOS	DELAY (sec)	V/C RATIO	QUEUES (ft)	
							50th%	95th%				50th%	95th%				50th%	95th%						50th%	95th%
Lowell Road (route 3a) & Sagamore Bridge Road	ACTUATED-COORDINATED	Overall		D	44.8	1.17			E	78.5	1.36			F	103.9	1.61			Overall		E	58.5	1.21		
		EB-LL	±930'	E	76	1.05	~665'	#804'	F	162.5	1.27	~888'	#1025'	F	167.3	1.29	~888'	#1025'	EB-LL	±930'	F	133.3	1.21	~850'	#987'
		EB-R		A	2.5	0.71	0'	0'	A	4.7	0.82	0'	0'	B	16.8	0.96	0'	#164'	EB-R		B	16.8	0.96	0'	#164'
		NB-LL	525'	F	114.5	1.17	~531'	#644'	F	191.5	1.36	~661'	m#709'	F	301.2	1.61	~851'	m#739'	NB-LLL	525'	F	90.8	1.11	~482'	#566'
		NB-TT	±1190'	A	9	0.35	146'	113'	A	8.4	0.4	113'	m120'	A	7.8	0.42	120'	m103'	NB-TT	±1190'	B	16.1	0.44	234'	285'
		SB-TT	±1000'	D	54.6	0.75	184'	240'	E	58.5	0.83	221'	#290'	E	63.5	0.89	244'	#342'	SB-TT	±1000'	E	76.3	1.01	~271'	m#380'
		SB-R	200'	A	5.2	0.83	0'	0'	A	0.8	0.56	0'	0'	A	0.8	0.56	0'	0'	SB-RR	200'	A	2.9	0.56	93'	94'
Lowell Road (route 3a) & Flagstone Drive/ Wason Road	ACTUATED-UNCOORDINATED	Overall		D	42.6	0.85			E	65.2	1.04			E	66.2	1.05			Overall		D	36.8	0.9		
		EB-LT	±810'	F	81.7	0.59	90'	165'	F	102.6	0.83	191'	#318'	F	104	0.83	191'	#323'	EB-LT	±810'	E	73.2	0.77	128'	#218'
		EB-R	250'	E	57.2	0.85	351'	#556'	F	101.2	1.04	~613'	#867'	F	104.2	1.05	~613'	#883'	EB-R	250'	D	39.4	0.82	313'	446'
		WB-L	200'	E	57.2	0.61	207'	368'	E	56.1	0.57	289'	406'	E	56.9	0.57	289'	412'	WB-L	200'	E	78.6	0.9	228'	#404'
		WB-LT	±590'	E	56.9	0.6	206'	366'	E	55.9	0.57	288'	406'	E	56.8	0.57	288'	411'	WB-LT	±590'	E	77.6	0.89	228'	#402'
		WB-R	75'	A	0.2	0.05	0'	0'	A	0.2	0.05	0'	0'	A	0.2	0.05	0'	0'	WB-R	75'	A	0.3	0.07	0'	0'
		NB-L	575'	E	61.1	0.26	66'	153'	E	78.6	0.61	177'	267'	E	79.6	0.61	177'	270'	NB-L	575'	E	58.6	0.45	132'	m140'
		NB-TT	±1000'	D	39.3	0.71	416'	648'	E	62	0.92	680'	794'	E	65	0.94	721'	#847'	NB-TT	±1000'	C	31.9	0.84	293'	m258'
		NB-R	275'	B	17.2	0.84	423'	809'	E	57.2	0.97	1042'	#1548'	E	56.5	0.97	1042'	#1558'	NB-RR	275'	A	2.8	0.58	37'	m39'
		SB-L	175'	F	85.7	0.57	72'	156'	F	100.3	0.67	101'	168'	F	101.6	0.68	101'	170'	SB-L	175'	F	81.1	0.69	69'	#146'
SB-TTR	±1520'	D	51.8	0.81	406'	576'	E	55.8	0.73	400'	454'	E	56.3	0.74	423'	478'	SB-TTTR	±430'	D	44.7	0.78	302'	#381'		
Lowell Road (route 3a) & Hampshire Drive/ Oblate Drive	ACTUATED-UNCOORDINATED	Overall		B	13.6	0.58			B	14.3	0.61			B	14.3	0.62									
		EB-LT	±500'	D	37.4	0.3	9'	43'	D	45.3	0.33	10'	54'	D	47.5	0.34	10'	#57'							
		EB-R	100'	A	5.2	0.25	0'	24'	A	6.2	0.27	0'	39'	A	6.4	0.28	0'	40'							
		WB-LT	±380'	C	33	0.07	4'	22'	D	39.2	0.07	4'	29'	D	40.8	0.08	4'	29'							
		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	41.4	0.15	7'	38'	D	42.8	0.15	7'	39'							
		NB-TTR	±1520'	B	11.4	0.53	83'	293'	B	12.7	0.6	108'	370'	B	12.6	0.61	116'	387'							
		SB-L	225'	D	35.2	0.04	2'	15'	D	41.7	0.05	2'	19'	D	43.3	0.06	2'	19'							
SB-TTR	±1790'	B	15.9	0.58	104'	226'	B	15.2	0.61	133'	295'	B	15.2	0.62	144'	312'									

TABLE 7 Cont.

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

INTERSECTION	CONTROL TYPE	LANE USE	STORAGE LENGTH (ft)	2019 EXISTING PM				2034 NO-BUILD PM				2034 BUILD PM				2034 BUILD WITH IMPROVEMENTS PM									
				LOS	DELAY (sec)	V/C RATIO	QUEUES (ft)		LOS	DELAY (sec)	V/C RATIO	QUEUES (ft)		LOS	DELAY (sec)	V/C RATIO	QUEUES (ft)		LANE USE	STORAGE LENGTH (ft)	LOS	DELAY (sec)	V/C RATIO	QUEUES (ft)	
							50th%	95th%				50th%	95th%				50th%	95th%						50th%	95th%
Lowell Road (route 3a) & Executive Drive	ACTUATED-UNCOORDINATED	Overall		<b>B</b>	<b>19</b>	<b>0.68</b>			<b>C</b>	<b>21.4</b>	<b>0.79</b>			<b>C</b>	<b>21.7</b>	<b>0.81</b>									
		EB-LT	±490'	C	33.9	0.68	94'	#226'	D	46.5	0.79	115'	#342'	D	50	0.81	121'	#356'							
		EB-R	225'	A	3.4	0.1	0'	19'	A	4.2	0.12	0'	30'	A	4.5	0.12	0'	31'							
		WB-LT	±580'	C	21.9	0.12	9'	31'	C	27.1	0.14	10'	40'	C	28.5	0.14	11'	41'							
		WB-R	80'	A	0.3	0.07	0'	0'	A	0.4	0.08	0'	0'	A	0.4	0.08	0'	0'							
		NB-L	350'	C	34.8	0.3	19'	58'	D	41.6	0.4	27'	77'	D	43.1	0.4	28'	79'							
		NB-TTR	±1790'	B	14.7	0.59	126'	249'	B	16.7	0.66	158'	308'	B	16.6	0.67	167'	324'							
		SB-L	150'	C	34	0.12	6'	28'	D	39.4	0.16	9'	34'	D	40.7	0.17	9'	36'							
SB-TTR	±1170'	C	20.4	0.61	126'	186'	B	19.8	0.63	167'	235'	B	19.7	0.64	181'	250'									
Lowell Road (route 3a) & Fox Hollow Drive/ Nottingham Square Driveway	ACTUATED-COORDINATED	Overall		<b>C</b>	<b>28.9</b>	<b>1.09</b>			<b>C</b>	<b>29.7</b>	<b>0.93</b>			<b>C</b>	<b>32.8</b>	<b>0.96</b>			<b>Overall</b>		<b>B</b>	<b>18.8</b>	<b>0.76</b>		
		EB-LT	±600'	E	71.6	0.24	12'	31'	F	89.5	0.21	15'	42'	F	89.5	0.21	15'	42'	EB-LT	±600'	F	89.5	0.21	15'	42'
		EB-R	50'	A	5	0.25	0'	0'	A	2.9	0.2	0'	0'	A	2.9	0.2	0'	0'	EB-R	50'	A	2.9	0.2	0'	0'
		WB-LT	±260'	F	106	0.65	33'	#77'	F	119.1	0.61	47'	94'	F	119.1	0.61	47'	94'	WB-LT	±260'	F	119.1	0.61	47'	94'
		WB-R	100'	B	16.6	0.29	0'	33'	B	16.1	0.25	0'	49'	B	16.1	0.25	0'	49'	WB-R	100'	B	16.1	0.25	0'	49'
		NB-L	210'	F	93.3	0.51	23'	#67'	F	105.6	0.46	37'	77'	F	105.6	0.46	37'	77'	NB-L	210'	F	105.6	0.46	37'	77'
		NB-T	±1410'	C	32.2	0.76	409'	591'	C	30.9	0.93	1038'	#2138'	D	36.1	0.96	1181'	#2248'	NB-TTR	±1410'	B	10.5	0.51	260'	615'
		NB-R	325'	A	0	0.01	0'	0'	A	0	0.01	0'	0'	A	0	0.01	0'	0'							
SB-L	125'	F	199.3	1.09	~57'	#154'	F	126.5	0.76	82'	#164'	F	126.5	0.76	82'	#164'	SB-L	125'	F	126.5	0.76	82'	#164'		
SB-TR	±550'	A	3.7	0.43	125'	165'	B	14.2	0.54	274'	806'	B	15.4	0.57	304'	892'	SB-TR	±550'	B	15.4	0.57	304'	892'		
Lowell Road (route 3a) & Pelham Road	ACTUATED-COORDINATED	Overall		<b>E</b>	<b>60.1</b>	<b>2.18</b>			<b>F</b>	<b>82.2</b>	<b>2.09</b>			<b>F</b>	<b>82.2</b>	<b>2.09</b>			<b>Overall</b>		<b>E</b>	<b>59.5</b>	<b>1.08</b>		
		WB-L	±510'	E	78.7	0.66	79'	130'	F	116.2	0.76	133'	204'	F	116.2	0.76	133'	204'	WB-L	±510'	F	112.8	0.74	133'	202'
		WB-R	75'	B	18.2	0.6	4'	67'	C	29.6	0.7	28'	130'	C	29.6	0.7	28'	130'	WB-R	75'	B	13.6	0.56	0'	78'
		NB-TR	±550'	D	41.2	0.82	897'	1171'	F	80.5	0.96	1196'	#2429'	F	82.5	0.99	1350'	#2546'	NB-TR	±550'	F	85.8	1.08	~1907'	#2807'
		SB-L	150'	F	614.7	2.18	~162'	#286'	F	574.4	2.09	~271'	#431'	F	574.4	2.09	~271'	#431'	SB-L	150'	F	113.3	0.79	172'	248'
SB-T	±1310'	A	4.4	0.45	131'	207'	A	9.7	0.53	215'	775'	B	10.3	0.57	239'	862'	SB-T	±1310'	B	10.6	0.57	242'	883'		

## Analysis Results

With the proposed roadway and signal improvements, the roadway network has adequate capacity to accommodate the amended development. Based on the results the proposed improvements mitigate the traffic impacts of the amended development and addresses existing operational deficiencies in the roadway network. It should also be noted that for the intersections receiving adaptive signal technology, the operational conditions cited in the tables above underestimate the improvements and these intersections should operate more efficiently than depicted in the tables.

The analysis of the study intersections reveals that most of the intersections analyzed on Lowell Road north of Sagamore Bridge Road will generally maintain overall acceptable or no-build operating conditions for the 2024 and 2034 build scenarios. 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. The analyses show that any capacity deficiencies or queuing issues at the intersections north of Sagamore Bridge Road are existing/no-build issues and are not greatly impacted by the development's anticipated traffic; however, we have provided recommendations to help improve traffic operating conditions at several of these intersections. Under the Build with Improvements conditions all the intersections either maintain or improve upon the levels of service.

As expected due to the proposed trip distribution, 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/River Road/Steele Road/Dracut Road

2024 No-Build to Build Conditions – Overall this intersection operates acceptably in the morning peak period and unsatisfactorily in the evening peak period under no-build and build conditions. For the 2024 analysis, overall the intersection maintains LOS B in the morning peak period and maintains LOS E in the evening peak period.

In the 2024 morning peak-hour, the north-westbound traffic from Dracut Road to Lowell Road maintains LOS B and exiting traffic from Steele Road maintains LOS D from no-build to build. The 95<sup>th</sup> percentile queues from Dracut Road increase by approximately five (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 maintains LOS C from no-build to build. The 95<sup>th</sup> percentile queues on the



southbound left turn movement increase by less than two car lengths and northbound through queues increase by less than a car length (See Table 4, page 19).

In the 2024 evening peak-hour, the north-westbound traffic from Dracut Road to Lowell Road maintains LOS B and exiting traffic from Steele Road maintains LOS E from no-build to build. The 95<sup>th</sup> percentile queues on the north-westbound approach increase by 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. The 95<sup>th</sup> percentile queues at the southbound left turn movement increase by approximately two car lengths and the northbound through movement queues will be maintained compared to the no-build (See Table 5, page 22).

2024 Build with Improvements Conditions – With the proposed improvements of reassigning one of the southbound through lanes to a second left-turn lane, the morning peak period remains overall LOS B and improves to overall LOS C in the evening peak period.

During the 2024 morning peak-hour the 95<sup>th</sup> percentile queues from Dracut Road decrease by about two car lengths from no-build to build with improvements. The southbound left turn movement improves from LOS D to LOS C and the 95<sup>th</sup> percentile queues on the southbound left turn movement decrease by approximately 15 car lengths from no-build to build with improvements conditions (See Table 4, page 19).

During the 2024 evening peak-hour, the southbound left turn movement improves from LOS F to LOS B and the northbound through movement improves from LOS E to LOS D. The 95<sup>th</sup> percentile queues at the southbound left turn movement decrease by approximately 56 car lengths and the northbound through will be maintained from no-build to build with improvements conditions (See Table 5, pages 22).

2034 No-Build to Build Conditions – For the 2034 analysis, overall the intersection maintains LOS B in the morning peak period and maintains LOS F in the evening peak period.

In the 2034 morning peak-hour, the north-westbound traffic from Dracut Road to Lowell Road maintains LOS B and exiting traffic from Steele Road maintains LOS D from no-build to build. The 95<sup>th</sup> percentile queues from Dracut Road increase by 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 maintains LOS D. The 95<sup>th</sup> percentile queues on the southbound left turn movement increase by less than two car lengths and northbound through queues increase by less than a car length (See Table 6, page 25).

In the 2034 evening peak-hour, the northwestbound traffic from Dracut Road to Lowell Road changes from LOS B to LOS C and exiting traffic from Steele Road maintains LOS E from no-build to build. The 95<sup>th</sup> percentile queues on the northwestbound approach increase by 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. The 95<sup>th</sup> percentile queues at the southbound left turn movement increase by approximately three car lengths and the northbound through movement queues increase by less than a car length (See Table 9, page 31).

2034 Build with Improvements Conditions - With the proposed improvements of reassigning one of the southbound through lanes to a second left-turn lane, the morning peak period remains overall LOS B and improves to overall LOS C in the evening peak period.

During the 2034 morning peak-hour, the 95<sup>th</sup> percentile queues from Dracut Road increase by less than one car length from no-build to build with improvements. The southbound left turn movement improves from LOS C to LOS B and the 95<sup>th</sup> percentile queues on the southbound left turn movement decrease by approximately 18 car lengths from no-build to build with improvements conditions (See Table 6, page 25).

During the 2034 evening peak-hour, the southbound left turn movement improves from LOS F to LOS B and the northbound through movement improves from LOS E to LOS D. The 95<sup>th</sup> percentile queues at the southbound left turn movement decrease by approximately 55 car lengths and the northbound through queue increases by less than one car length from no-build to build with improvements conditions (See Table 7, pages 28).

#### Lowell Road & Green Meadow Drive/Rena Avenue

2024 No-Build to Build Conditions – Overall, the intersection operates acceptably in the morning and afternoon peak periods. For the 2024 analysis, overall the intersection changes from LOS A to LOS B in the morning peak period and from LOS A to LOS C in the evening peak period.

In the 2024 morning peak-hour, Green Meadow Drive/Hudson Logistics Center Driveway changes from LOS D to LOS E and Rena Avenue maintains LOS B from no-build to build. The 95<sup>th</sup> percentile queues for the Green Meadow Drive approach increase by nine car lengths and Rena Avenue queues decrease slightly. The northbound left turn movement maintains LOS D and the 95<sup>th</sup> percentile queues increase by less than a car length. The northbound through movement maintains LOS A and the southbound through movement maintains LOS B. The 95<sup>th</sup> percentile queues for the northbound through movement

increase by approximately two car lengths and the southbound queues increase by approximately three car lengths (See Table 4, page 19).

In the 2024 evening peak-hour, the Green Meadow Drive/Hudson Logistics Center Driveway approach changes from LOS E to LOS F and Rena Avenue maintains LOS A from no-build to build. The 95<sup>th</sup> percentile queues for the Green Meadow Drive approach increase by 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 95<sup>th</sup> percentile queues increase by one car length. The northbound and southbound through movements each change from LOS A to LOS B. The 95<sup>th</sup> percentile queues for the northbound through movement increase by approximately 15 car lengths and the southbound queues increase by less than four car lengths. The southbound left turn movement changes from LOS D to LOS E and the 95<sup>th</sup> percentile queues decrease slightly (See Table 5, page 22).

2024 Build with Improvements Conditions – With the proposed improvements, the morning peak period and evening peak period both operate at overall LOS B. Intersections with overall LOS B are generally considered acceptable and although the overall intersection LOS for both time periods change from LOS A to LOS B with the proposed improvements, this intersection represents the primary access location for the proposed development where the greatest change to traffic volumes is expected.

During the 2024 morning peak-hour, Green Meadow Drive maintains LOS D and Rena Avenue changes from LOS B to LOS C. The 95<sup>th</sup> percentile queues at Green Meadow Drive increase by less than five car lengths and Rena Avenue queues increase negligibly from no-build to build with improvements conditions. The northbound left turn movement also maintains LOS D and the 95<sup>th</sup> percentile queues increase by less than 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. The 95<sup>th</sup> percentile queues for the northbound through movement increase by less than one car length and the southbound through queues decrease by approximately five car lengths from no-build to build with improvements conditions (See Table 4, page 19).

During the 2024 evening peak-hour, the Green Meadow Drive approach maintains LOS E and Rena Avenue maintains LOS A. The 95<sup>th</sup> percentile queues increase by less than three car lengths from the Green Meadow Drive approach and Rena Avenue queues remain nominal. The northbound left turn movement maintains LOS E and the 95<sup>th</sup> percentile queues increase by less than two car lengths from no-build to build with improvements. The northbound through movement changes from LOS A to LOS B and the southbound through movement maintains LOS A. The 95<sup>th</sup> percentile queues for the northbound through movement increase by less than 15 car lengths and the southbound queues

decrease by approximately three car lengths from no-build to build with improvements conditions (See Table 5, page 22).

2034 No-Build to Build Conditions – For the 2034 analysis, overall the intersection changes from LOS A to LOS B in the morning peak period and from LOS A to LOS C in the evening peak period.

In the 2034 morning peak-hour, Green Meadow Drive changes from LOS D to LOS E and Rena Avenue maintains LOS B from no-build to build. The 95<sup>th</sup> percentile queues for the Green Meadow Drive approach increase by nine cars and Rena Avenue queues remain the same. The northbound left turn movement maintains LOS D and the 95<sup>th</sup> percentile queues increase by one car. The northbound through movement maintains LOS A and the southbound through movement maintains LOS B. The 95<sup>th</sup> percentile queues for the northbound through movement increase by less than two cars and the southbound queues increase by approximately two cars (See Table 6, page 25).

In the 2034 evening peak-hour, the Green Meadow Drive approach changes from LOS E to LOS F and Rena Avenue maintains LOS A from no-build to build. The 95<sup>th</sup> percentile queues for the Green Meadow Drive approach increase by approximately 18 car lengths and Rena Avenue queues remain the same. The northbound left turn movement maintains LOS E and 95<sup>th</sup> percentile queues increase by approximately one car length. The northbound and southbound through movements each change from LOS A to LOS B. The 95<sup>th</sup> percentile queues for the northbound through movement increase by two car lengths and the southbound queues increase by approximately five car lengths. The southbound left turn movement changes from LOS D to LOS E and the 95<sup>th</sup> percentile queues decrease slightly (See Table 7, page 28).

2034 Build with Improvements Conditions – With the proposed improvements, both the morning and evening peak periods both operate at overall LOS B. Intersections with overall LOS B are generally considered acceptable and although the overall intersection LOS for both time periods change from LOS A to LOS B with the proposed improvements, this intersection represents the primary access location for the proposed development where the greatest change to traffic volumes is expected.

In the 2034 morning peak-hour, Green Meadow Drive maintains LOS D and Rena Avenue maintains LOS B. The 95<sup>th</sup> percentile queues at Green Meadow Drive increase by five car lengths and Rena Avenue remain at zero. The northbound left turn movement maintains LOS D and the 95<sup>th</sup> percentile queues increase by one car length. The northbound through movement maintains LOS A and the southbound through movement changes from LOS C to LOS B. The 95<sup>th</sup> percentile queues for the northbound through movement increase by approximately eight car lengths and the southbound through queues decreases by one car length from no-build to build with improvements (See Table 6, page 25).

In the 2034 evening peak-hour, Green Meadow Drive maintains LOS E and Rena Avenue maintains LOS A. The 95<sup>th</sup> percentile queues at Green Meadow Drive increase by approximately four car lengths and remain at zero for Rena Avenue. The northbound left turn movement maintains LOS E and the 95<sup>th</sup> percentile queues increase by less than two car lengths. The northbound through movement changes from LOS A to LOS B and southbound through movement maintains LOS A from no-build to build with improvements. The 95<sup>th</sup> percentile queues for the northbound through increase by less than one car length and the southbound through by approximately 20 car lengths (See Table 7, page 28).

#### Lowell Road & Wal-Mart Boulevard

2024 No-Build to Build Conditions – Overall, the intersection operates acceptably in the morning and afternoon peak periods for the 2024 analysis year. For the 2024 analysis, overall the intersection changes from LOS B to LOS C from no-build to build in the morning peak period and changes from LOS C to LOS D in the evening peak period.

In the 2024 morning peak-hour, the eastbound left turn movement maintains LOS D from no-build to build and the 95<sup>th</sup> percentile queues increase by 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 18 cars and the southbound through queues increase by approximately three cars (See Table 4, page 19).

In the 2024 evening peak-hour, the eastbound left turn movement changes from LOS D to LOS E from no-build to build and the 95<sup>th</sup> percentile queues increase by less than one car length. The northbound through movement changes from LOS C to LOS D and the southbound through movement maintains LOS C. The northbound through queues increase by approximately seven cars and the southbound through queues increase by approximately eight cars (See Table 5, page 22).

2024 Build with Improvements Conditions – With the proposed improvements, the overall intersection maintains LOS B in the morning peak period and maintains LOS C in the evening peak period.

In the 2024 morning peak-hour, the eastbound left turn movement maintains LOS D and the 95<sup>th</sup> 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. The 95<sup>th</sup> percentile queues for the northbound through movement decreases by approximately four car lengths and the southbound through queues decrease by approximately four car lengths from no-build to build with improvements (See Table 4, page 19).

In the 2024 evening peak-hour, the eastbound left turn changes from LOS D to LOS E and the 95<sup>th</sup> percentile queues increase by less than one car length. The northbound through movement maintains LOS C and the southbound through movement improves from LOS C to LOS B. The 95<sup>th</sup> percentile queues for the northbound through movement decrease by approximately 17 car lengths and southbound through queues decrease by approximately 13 car lengths from no-build to build with improvements (See Table 5, page 22).

2034 No-Build to Build Conditions – For the 2034 analysis, overall the intersection changes from LOS B to LOS C in the morning peak period and changes from LOS D to LOS E in the evening peak period.

In the 2034 morning peak-hour, the eastbound left turn movement maintains LOS D from no-build to build and the 95<sup>th</sup> percentile queues increase by less than one car. The northbound through and southbound through movements each changes from LOS B to LOS C from no-build to build. The northbound through queues increase by approximately five cars and the southbound through queues approximately four cars (See Table 6, page 25).

In the 2034 evening peak-hour, the eastbound left turn movement changes from LOS D to LOS E from no-build to build and the 95<sup>th</sup> percentile queues increase by less than one car length. The northbound through movement changes from LOS D to LOS F and the southbound through movement maintains LOS C. The northbound through queues increase by approximately seven cars and the southbound through queues increase by approximately six cars (See Table 7, page 28).

2034 Build with Improvements Conditions – With the recommended base improvements, the overall intersection maintains LOS B in the morning peak period and maintains LOS C in the evening peak period.

In the 2034 morning peak-hour, the eastbound left turn maintains LOS D and the 95<sup>th</sup> percentile queues increase by less than one car length. The northbound through movement maintains LOS B and the southbound through movement maintains LOS B. The 95<sup>th</sup> percentile queues for the northbound through movement decrease by approximately 13 car lengths and southbound through queues decrease by approximately five car lengths from no-build to build with improvements (See Table 6, page 25).

In the 2034 evening peak-hour, the eastbound left turn maintains LOS E and the 95<sup>th</sup> percentile queues increase by approximately two car lengths. The northbound through movement improves from LOS D to LOS C and the southbound through movement improves from LOS C to LOS B. The 95<sup>th</sup> percentile queues for the northbound through movement decrease by approximately 21 car lengths and southbound through queues

decrease by approximately 16 car lengths from no-build to build with improvements (See Table 7, page 28).

*Lowell Road & Sagamore Bridge Road*

2024 No-Build to Build Conditions – For the 2024 analysis, overall the intersection changes from LOS C to LOS D in the morning peak period and maintains LOS E in the evening peak period.

In the 2024 morning peak-hour, the eastbound left turn movement maintains LOS D from no-build to build and the 95<sup>th</sup> percentile queues remain the same. The northbound left turn movement maintains LOS F and the 95<sup>th</sup> percentile queues increase by approximately five cars. The southbound through movement maintains LOS D and the 95<sup>th</sup> percentile queues increase by less than one car (See Table 4, page 19).

In the 2024 evening peak-hour, the eastbound left turn movement maintains LOS F from no-build to build and the 95<sup>th</sup> percentile queues remain the same. The northbound left turn movement maintains LOS F and the 95<sup>th</sup> percentile queues increase by approximately three cars. The southbound through movement maintains LOS E and the 95<sup>th</sup> percentile queues increase by approximately one car (See Table 5, page 22).

2024 Build with Improvements Conditions – With the recommended base improvements, overall the intersection improves from LOS D to LOS B in the morning peak period and improves from LOS E to LOS D in the evening peak period.

In the 2024 morning peak-hour, the eastbound left turn movement improves from LOS D to LOS C and the 95<sup>th</sup> percentile queues decrease by approximately four car lengths. The northbound left turn movement improves from LOS F to LOS C and the 95<sup>th</sup> percentile queues decrease by approximately eight car lengths from no-build to build with improvements conditions. The southbound through movement also improves from LOS D to LOS C and the 95<sup>th</sup> percentile queues decrease negligibly (See Table 4, page 19).

In the 2024 evening peak-hour, the eastbound left turn movement maintains LOS F and the 95<sup>th</sup> percentile queues decrease by less than two car lengths. The northbound left turn movement improves from LOS F to LOS E and the 95<sup>th</sup> percentile queues decrease by eight car lengths from no-build to build with improvements conditions. The southbound through movement maintains LOS E and 95<sup>th</sup> percentile queues increase by less than four car lengths (See Table 5, page 22).

2034 No-Build to Build Conditions – For the 2034 analysis, overall the intersection changes from LOS D to LOS E in the morning peak period and changes from LOS E to LOS F in the evening peak period.

In the 2034 morning peak-hour, the eastbound left turn movement changes from LOS D to LOS E from no-build to build and the 95<sup>th</sup> percentile queues remain the same. The northbound left turn movement maintains LOS F and the 95<sup>th</sup> percentile queues increase by approximately four cars. The southbound through movement maintains LOS D and the 95<sup>th</sup> percentile queues increase by less than one car (See Table 6, page 25).

In the 2034 evening peak-hour, the eastbound left turn movement maintains LOS F from no-build to build and the 95<sup>th</sup> percentile queues remain the same. The northbound left turn movement maintains LOS F and the 95<sup>th</sup> percentile queues increase by approximately two cars. The southbound through movement maintains LOS E and the 95<sup>th</sup> percentile queues increase by approximately two cars (See Table 7, page 28).

2034 Build with Improvements Conditions – With the recommended base improvements, overall the intersection improves from LOS D to LOS B in the morning peak period and in the evening peak period maintains LOS E.

In the 2034 morning peak-hour, the eastbound left turn movement maintains LOS D and the 95<sup>th</sup> percentile queues decrease by three car lengths. The northbound left turn movement improves from LOS F to LOS C and the 95<sup>th</sup> percentile queues decrease by approximately seven car lengths from no-build to build with improvements conditions. The southbound through movement also maintains from LOS D and the 95<sup>th</sup> percentile queues decrease by approximately one car length (See Table 6, page 25).

In the 2034 evening peak-hour, the eastbound left turn movement maintains LOS F and the 95<sup>th</sup> percentile queues decrease by one car length from no-build to build with improvements. The northbound left turn movement maintains LOS F and the 95<sup>th</sup> percentile queues decrease by approximately six car lengths from no-build to build with improvements conditions. The southbound through movement also maintains LOS E and the 95<sup>th</sup> percentile queues increase by approximately three car lengths (See Table 7, page 28).

#### Analysis Results Comparison (Approved vs Amended)

We compared the peak hour analyses results between the approved and amended development and found that the amended development's traffic impacts are expected to be generally less compared to the approved development. This would be expected, as the trip generation of the amended development is generally less than the previously approved development. The average daily traffic of the amended development will generate approximately 1,500 less trips. The traffic analysis shows that the study intersections are expected to operate in similar or better conditions compared to the approved development. Comparison tables between the approved and amended developments are included in Appendix J.



### SimTraffic Analysis Results

In addition to the traditional Synchro analysis, a SimTraffic micro-simulation modeling was performed for all the intersection in the study area, with a focus on the intersection with the proposed adaptive signal technology. The SimTraffic model provides for additional operating characteristics to be considered in the analysis and more accurately reflects the effectiveness of the adaptive signal technology. The results of the analysis indicates that the roadway corridor will operate more effectively than indicated in the Synchro analysis indicates. This confirms that the roadway network has adequate capacity to accommodate the proposed development. The resulting queuing and blocking reports are included in Appendix K. Appendix L contains No-Build verse Build with Improvements comparison figures showing the expected queues for the no-build and build scenarios for both analysis years, based on the SimTraffic analyses.

SimTraffic is a micro-simulation analysis that simulates a wide variety of traffic controls. Each vehicle in the traffic system is individually tracked through the model and comprehensive operational measures of effectiveness are collected on every vehicle during each 0.1-second of the simulation. SimTraffic measures the full impact of queuing and blocking and shows more realistic traffic conditions compared to a macro-simulation model like Synchro. The calibration of the SimTraffic model was based on the guidelines from NHDOT and the results are based on the average of five simulation runs.

### Analysis Results Comparison (Tenant Schedule vs ITE)

The proposed tenant has an operating schedule, which includes a specific shift timing and the number of employees on each of the two shifts. These shift changes generally occur outside of the roadway peak hours. In an effort to evaluate the potential impacts of the actual shift change traffic volumes, we prepared a 2024 build analysis of these tenant volumes during the roadway peak hours and compared it to the peak hour analysis based on ITE anticipated project trips and found that based on the tenant schedule the traffic impacts are expected to be generally similar or less compared to the ITE analysis. This would be expected, as the trip generation based on the tenant schedule is generally less during the evening peak hour, which is the timeframe with more traffic in the study area. The main difference between the tenant data and ITE is that based on the tenant schedule project traffic is expected to be mostly entering the facility instead of having a more even directional distribution as shown on ITE. The analysis is considered to be conservative since none of the shifts changes the will occur during the roadway peak hour. The traffic analysis shows that the study intersections are expected to operate in similar or better conditions compared to the ITE analysis. Comparison tables between the tenant and ITE peak hour analyses are included in Appendix J.

### Recommended Improvements Summary

A review of the analysis shows that the majority of the development traffic impacts are on the southern Lowell Road (Route 3A) corridor, generally at the intersections of Lowell Road from the intersection with Sagamore Bridge Road south to the new Green Meadow Drive. We propose a number roadway improvements to improve existing operating conditions and to mitigate the project related traffic impacts. These improvements would be constructed by the developer and completed prior to the opening of the development.

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 (2024 and 2034). The base improvements listed below at the intersections north of Flagstone Drive/Wason 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 improve existing and no-build traffic operations.

### Proposed Improvements

Based on our analyses, the following improvements are proposed to improve existing operating conditions and mitigate the potential traffic impacts 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 real-time, through video detection, which will allow for seasonal and time-of-day variations in traffic. The industry standard capacity analysis software is unable to calculate the value of adaptive signal technology and capture the efficiency this system provides. We have optimized and coordinated the signal timings in the capacity analyses at the intersections noted below to try to capture the benefits of these improvements, however, we expect the intersections to operate better than indicated in the analysis. We recommend that these signals be incorporated into the town of Hudson system. Note that the intersection of Lowell Road & Wason Road/Flagstone Road is already incorporated into the town's control system.
  - Lowell Road (Route 3A) & Wason Road/Flagstone Drive
  - Lowell Road (Route 3A) & Sagamore Bridge Road
  - Lowell Road (Route 3A) & Wal-Mart Boulevard
  - Lowell Road (Route 3A) & Green Meadow Drive/Rena Avenue
  - Lowell Road (Route 3A)/River Road/Dracut Road/Steele Road

- Signal timing optimization at the following intersections during 2034 conditions
  - Lowell Road (Route 3A) & Executive Drive
  - Lowell Road (Route 3A) & Fox Hollow Drive
  - Lowell Road (Route 3A) & Pelham Road
- Construction of the following improvements at the intersection of Lowell Road and Dracut Road /Steele Road:
  - Restripe one of the southbound thru lanes to a second exclusive left-turn lane onto Dracut Road and widen Dracut Road south of the intersection to accept a second receiving lane, which would transition back down to a single lane with a lane drop
  - Replace the stormwater drainage culvert under Lowell Road
- Construction of the following improvements at the intersection of Lowell Road and Rena Avenue/Mercury Systems driveway
  - Reconfigure the Mercury Systems driveway (Green Meadow Drive) as a private driveway serving both Mercury Systems and the proposed development, intersecting with Rena Avenue at the existing traffic signal
  - Provide two left-turn lanes and a shared thru/right-turn lane on the eastbound approach
  - Widen the west side of Lowell Road to provide a southbound exclusive left-turn lane, two thru lanes and a shared thru/right-turn lane.
  - Adjust the existing median island north of the intersection to allow for turning movements from Green Meadow Drive
- Reconstruction the intersection of Lowell Road and Wal-Mart Boulevard
  - Construct a southbound exclusive right turn lane with approximately 315 feet of storage by modifying the existing median north of Wal-Mart Boulevard and restripe the northbound existing lanes.
  - Convert the existing northbound exclusive right turn lane to a shared thru/right-turn lane and restripe/widen on the north side of the intersection to receive the additional thru lane.
- Reconstruction of the intersection of Lowell Road and Sagamore Bridge Road
  - Construction of a third northbound left turn lane
  - Widen/restripe a segment of Lowell Road (Route 3A) to provide three northbound travel lanes from Rena Avenue to Walmart Boulevard
  - Reconfigure the channelization island on Lowell Road
- Reconstruction of the intersection of Lowell Road and Wason Road/Flagstone Road
  - Construction of a second northbound right turn lane
  - Construction of an additional receiving lane on Wason Road eastbound to accept the two right-turning lanes from Lowell Road northbound
  - Provide a lane drop approximately 700 feet east of Lowell Road to meet existing Wason Road eastbound geometry

- 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 4 through 7 compare the capacity analysis for the 2024 and 2034 build conditions based on the proposed outlined above. Appendix H and Appendix I provide detailed reports for the 2024 Build with Improvements and 2034 Build with Improvements conditions. Detailed roadway improvement plans depicting the above-referenced improvements are provided in Appendix A. These plans have been approved by the town for the previous development and have been reviewed and approved by the NHDOT.

#### Potential Future Improvements

In addition to the proposed noted above, unrelated to mitigating the traffic impacts of the development, we have identified additional potential future improvements at the intersection of Lowell Road and Flagstone Drive/Wason Road that would further improve traffic operating conditions at this location. These improvements would require right-of-way acquisitions from private property owners, which would need to be pursued by the town of Hudson. The developer has committed a set amount to fund the improvements, if the town pursues this improvement. These potential future improvements include the following:

- Widen the northbound approach to provide an exclusive left-turn lane, three thru lanes and two exclusive right-turn lanes
- Widen the eastbound approach to provide a shared left-turn/thru lane and two exclusive right-turn lanes
- Widen to provide an additional northbound receiving lane on the north side of the intersection that becomes an exclusive right-turn lane into the Market Basket plaza
- Install variable lane usage signing/controls for the northbound approach to allow for two exclusive left-turn lanes, two thru lanes and two exclusive right-turn lanes during the weekday morning commuter peak to account for the high volume of left-turning traffic onto Flagstone Drive

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

#### Accidents

The most recent three 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 9 through Table 11 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. Only 29 (16%) of the reported accidents resulted in injuries. The majority of accidents occurred during dry weather conditions (80%) and during daylight hours (82%).

<b>TABLE 9 CRASH DATA – CRASH SEVERITY (2019 – 2021)</b>					
<b>INTERSECTION</b>	<b>NUMBER OF ACCIDENTS</b>		<b>SEVERITY</b>		
	<b>Total</b>	<b>Average Per Year</b>	<b>Property Damage Only</b>	<b>Personal Injury</b>	<b>Fatality</b>
Lowell Road @Pelham Road	9	1.8	7 (78%)	2 (22%)	0 (0%)
Lowell Road @ Fox Hollow Drive	12	2.4	10 (83%)	2 (17%)	0 (0%)
Lowell Road @ Executive Drive	11	2.2	8 (73%)	3 (27%)	0 (0%)
Lowell Road @ Hampshire Drive/Oblate Drive	7	1.4	3 (43%)	4 (57%)	0 (0%)
Lowell Road @ Wason Road/Flagstone Drive	36	7.2	31 (86%)	5 (14%)	0 (0%)
Lowell Road @ Sagamore Bridge	57	11.4	48 (84%)	9 (16%)	0 (0%)
Lowell Road @ Wal-Mart Boulevard	36	7.2	33 (92%)	3 (8%)	0 (0%)
Lowell Road @ Rena Street	8	1.6	8 (100%)	0 (0%)	0 (0%)
Lowell Road @ River Road	1	0.2	1 (100%)	0 (0%)	0 (0%)
Lowell Road @ Dracut Road	10	2.0	9 (90%)	1 (10%)	0 (0%)

Source: Hudson New Hampshire Police Department (2019 – 2021)

<b>TABLE 10 CRASH DATA – MANNER OF CRASH (2019 – 2021)</b>							
<b>INTERSECTION</b>	<b>MANNER OF CRASH</b>						
	<b>Angle</b>	<b>Rear End</b>	<b>Head On</b>	<b>Sideswipe</b>	<b>Fixed Object</b>	<b>Pedestrian</b>	<b>Not Reported</b>
Lowell Road @ Pelham Road	1 (11%)	7 (78%)	0 (0%)	1 (11%)	0 (0%)	0 (0%)	0 (0%)
Lowell Road @ Fox Hollow Drive	1 (8%)	9 (75%)	2 (17%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Lowell Road @ Executive Drive	2 (18%)	7 (64%)	1 (9%)	1 (9%)	0 (0%)	0 (0%)	0 (0%)
Lowell Road @ Hampshire Drive/Oblate Drive	2 (29%)	4 (57%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (14%)
Lowell Road @ Wason Road/Flagstone Drive	9 (25%)	23 (64%)	3 (8%)	1 (3%)	0 (0%)	0 (0%)	0 (0%)
Lowell Road @ Sagamore Bridge	12 (21%)	40 (70%)	3 (5%)	1 (2%)	0 (0%)	0 (0%)	1 (2%)
Lowell Road @ Wal-Mart Boulevard	11 (31%)	22 (61%)	3 (8%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Lowell Road @ Rena Street	3 (38%)	5 (63%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Lowell Road @ River Road	1 (100%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	(0%)	0 (0%)
Lowell Road @ Dracut Road	2 (20%)	7 (70%)	1 (10%)	0 (0%)	0 (0%)	(0%)	0 (0%)

Source: Hudson New Hampshire Police Department (2019 – 2021)

<b>TABLE 11 CRASH DATA – CONDITIONS (2019 – 2021)</b>				
<b>INTERSECTION</b>	<b>CONDITIONS</b>			
	<b>Clear (Dry)</b>	<b>Rain/Snow</b>	<b>Day</b>	<b>Night</b>
Lowell Road @Pelham Road	6 (67%)	3 (33%)	8 (89%)	1 (11%)
Lowell Road @ Fox Hollow Drive	11 (92%)	1 (8%)	10 (83%)	2 (17%)
Lowell Road @ Executive Drive	10 (91%)	1 (9%)	9 (82%)	2 (18%)
Lowell Road @ Hampshire Drive/Oblate Drive	5 (71%)	2 (29%)	7 (100%)	0 (0%)
Lowell Road @ Wason Road/Flagstone Drive	26 (72%)	10 (28%)	30 (83%)	6 (17%)
Lowell Road @ Sagamore Bridge	45 (79%)	12 (21%)	45 (79%)	12 (21%)
Lowell Road @ Wal-Mart Boulevard	31 (86%)	5 (14%)	31 (86%)	5 (14%)
Lowell Road @ Rena Street	5 (63%)	3 (38%)	6 (75%)	2 (25%)
Lowell Road @ River Road	1 (100%)	0 (0%)	0 (0%)	1 (100%)
Lowell Road @ Dracut Road	9 (90%)	1 (10%)	7 (70%)	3 (30%)

Source: Hudson New Hampshire Police Department (2019 – 2021)

## 6.0 SUMMARY AND CONCLUSIONS

This evaluation identifies the potential traffic impacts generated by the amendment Hudson Logistics Center development on the surrounding area road network. We performed a Synchro capacity analysis for the 2019 existing; 2024 and 2034 no-build; and 2024 and 2034 build scenarios for nine intersections. We also conducted SimTraffic capacity analysis of for all the intersections in the study area, with a focus on the intersection with the proposed adaptive signal technology. The SimTraffic model provides for additional operating characteristics to of the performed analysis and reflects more accurately the effectiveness of the adaptive signal technology. Our evaluation indicates that, with the proposed improvements, the intersections analyzed will maintain or improve on the no-build traffic operating conditions. The improvements recommended will address operating condition deficiencies of the existing roadway network and mitigates the impacts of the amended development.

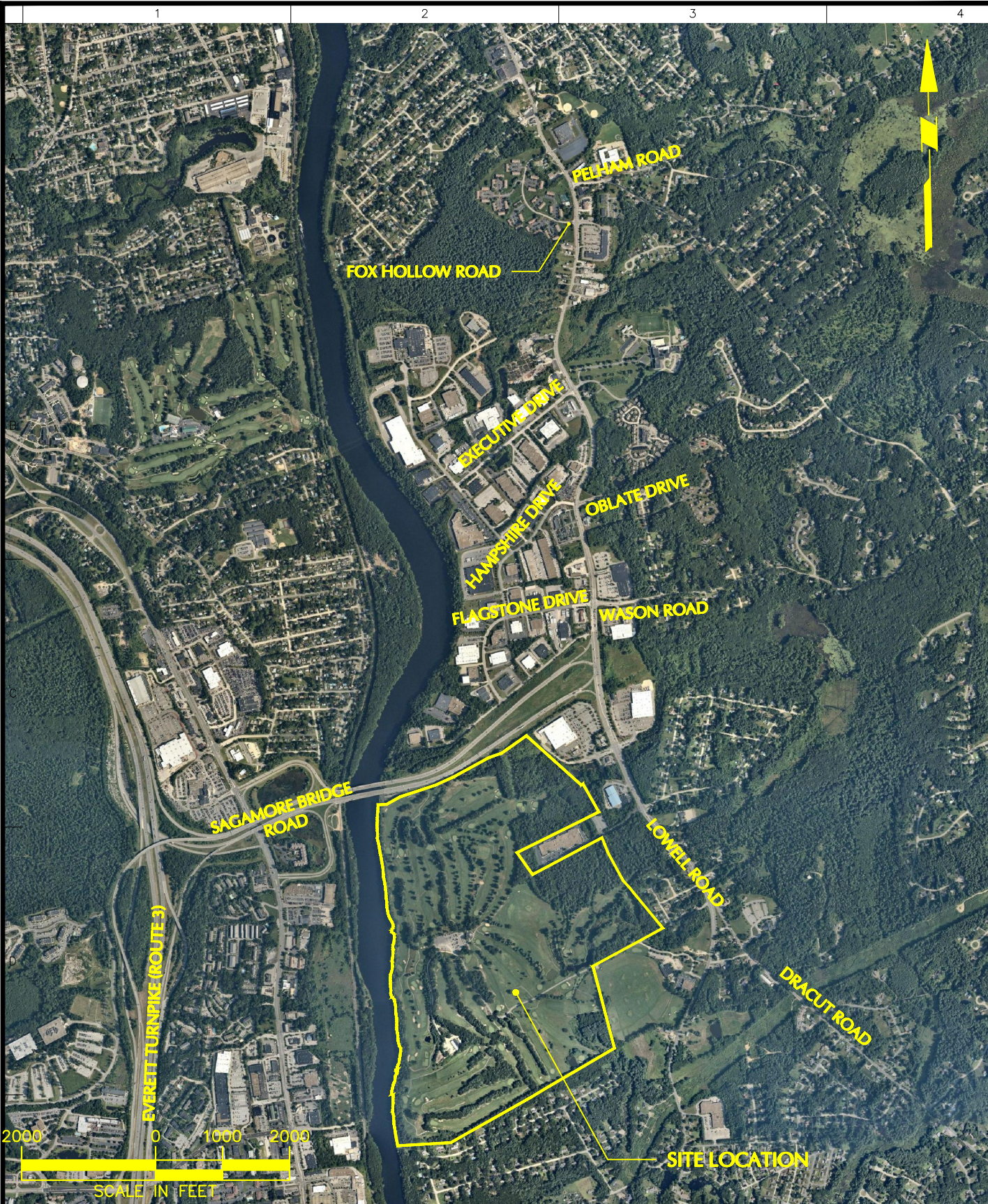
The town recently approved a three building fulfilment center warehouse development of 2.6 million square-foot under application SP04-20 on the subject site. The applicant is requesting to amend the development with a single building, with a  $\pm 1.4$  million square-foot footprint, to be operated by a single fulfilment center warehouse tenant. We compared the tenant trip generation data for both developments (approved and amended) and determined that the amended development will generate less average daily traffic (2406) compared to the approved development (4114). The peak hour volumes of the amended development are also less than the approved development. As would be expected, the study intersections are anticipated to operate in similar or better conditions compared to the approved development.

Upon implementation of the proposed improvements, the traffic impact of the amended development is mitigated and existing operating conditions will be improved as compared to current conditions. It is our professional opinion that these improvement mitigate the traffic impacts of the proposed development.

## **Figures**

Figure 1	Location Map
Figure 2	Study Area Intersections
Figure 3	2019 Existing Peak-Hour Traffic Volumes
Figure 4	2024 No-Build Peak-Hour Traffic Volumes
Figure 4A	2024 Ambient Growth Peak-Hour Traffic Volumes
Figure 4B	Committed Development Peak-Hour Traffic Volumes
Figure 5	2034 No-Build Peak-Hour Traffic Volumes
Figure 5A	2034 Ambient Growth Peak-Hour Traffic Volumes
Figure 6	Trip Distribution
Figure 7	Trip Assignment
Figure 7A	Truck Trip Assignment
Figure 8	2024 Build Peak-Hour Traffic Volumes
Figure 9	2034 Build Peak-Hour Traffic Volumes





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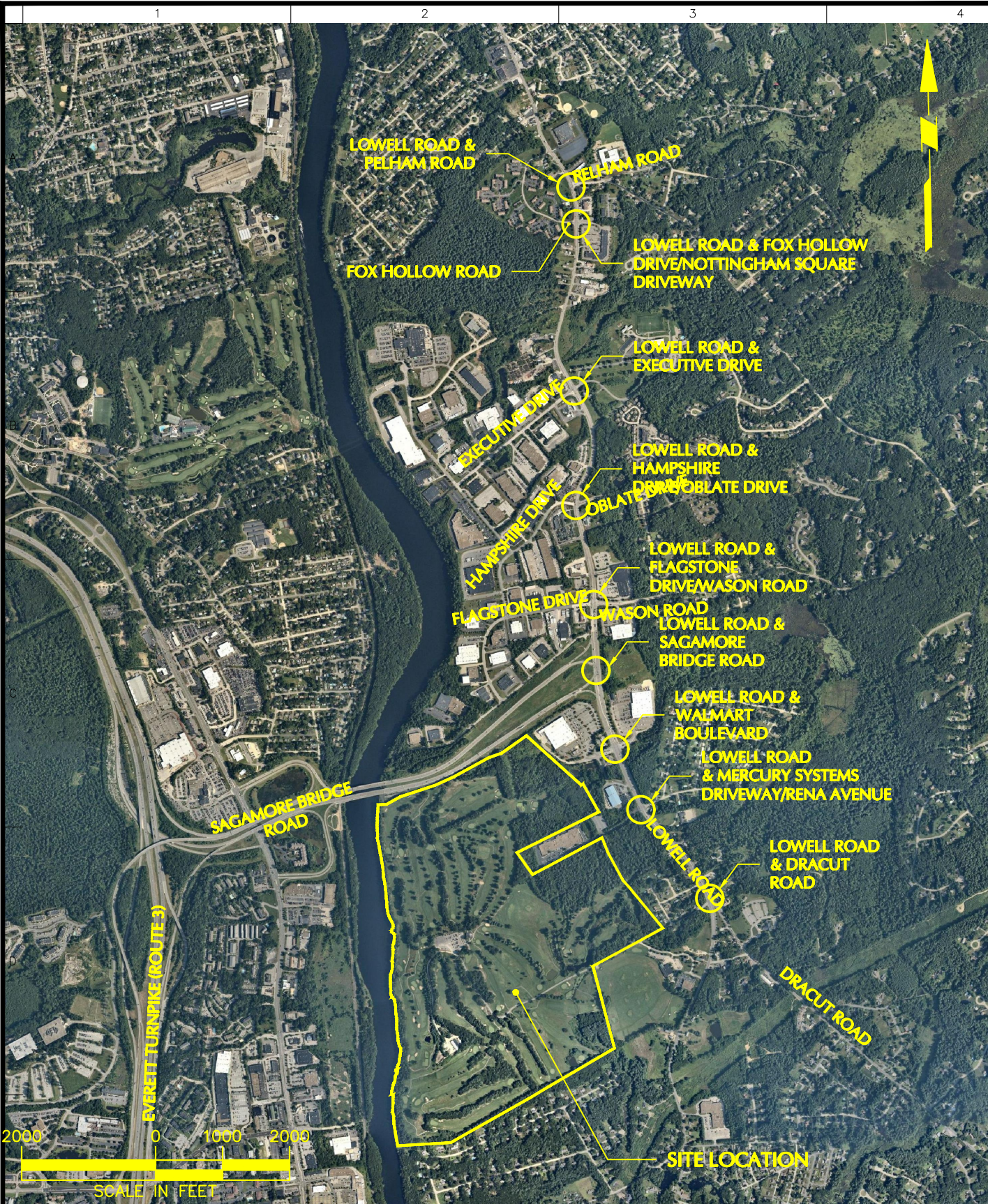
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HILLSBOROUGH COUNTY NEW HAMPSHIRE

Drawing Title  
**LOCATION MAP**

Project No.  
**151010101**  
Date  
**08/10/2022**  
Drawn By  
**CJM**  
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**MGP**

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**FIG. 1**

Sheet 1 of 12



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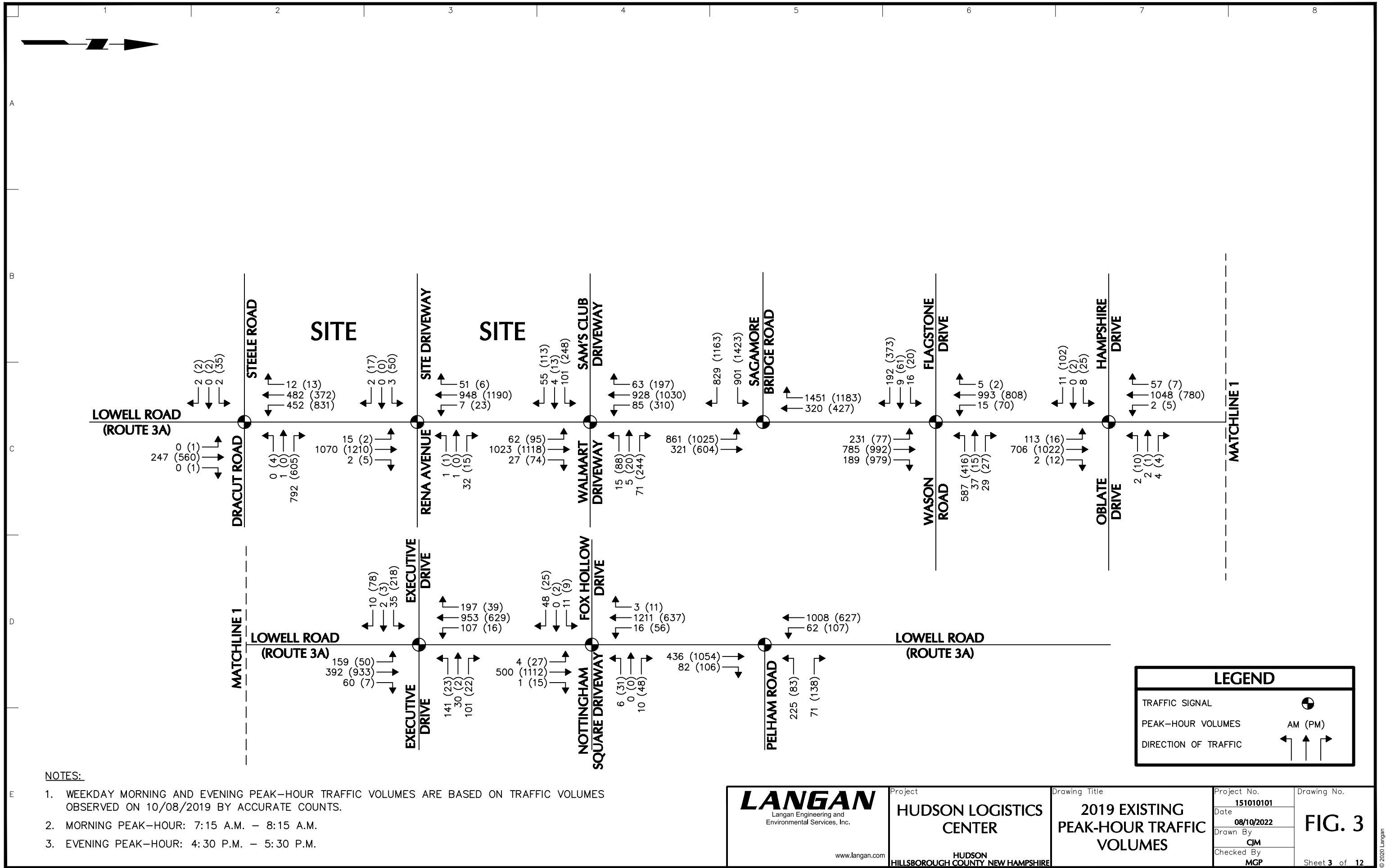
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HILLSBOROUGH COUNTY NEW HAMPSHIRE

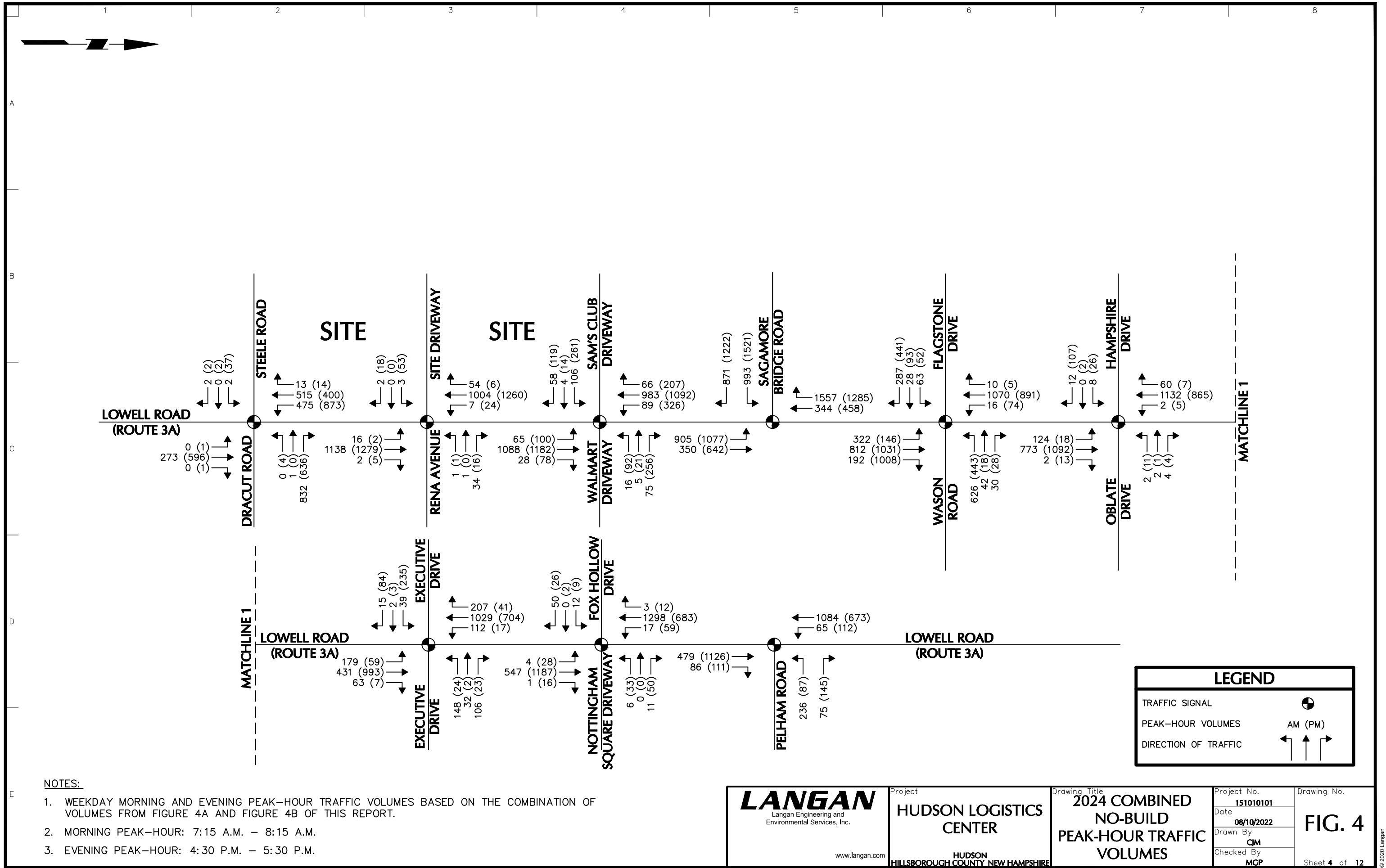
Drawing Title  
**STUDY  
INTERSECTIONS MAP**

Project No.  
**151010101**  
Date  
**08/10/2022**  
Drawn By  
**CJM**  
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Drawing No.  
**FIG. 2**

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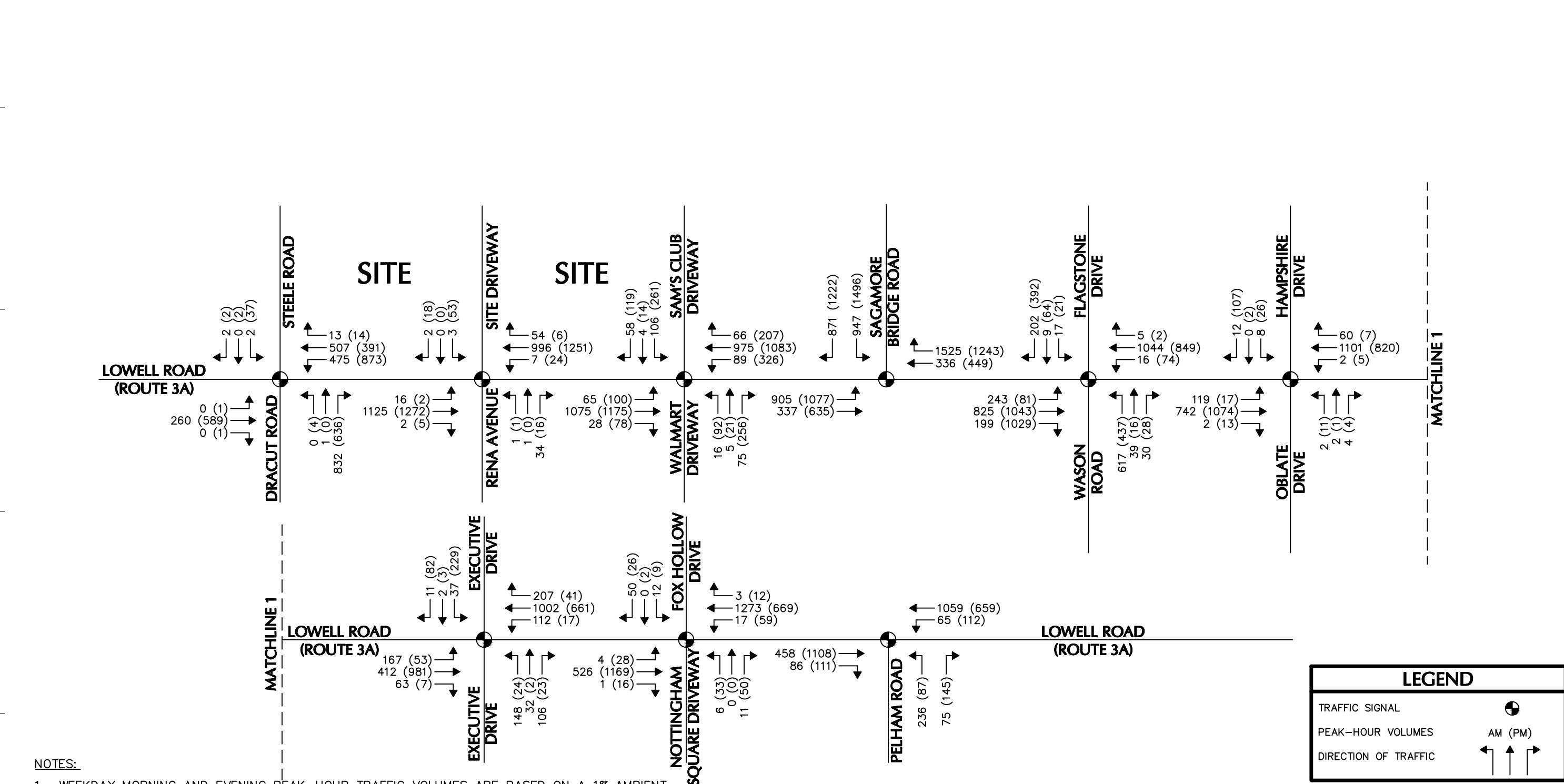




**NOTES:**

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.

<p>LANGAN Langan Engineering and Environmental Services, Inc. www.langan.com</p>	Project	Drawing Title	Project No.	Drawing No.
	HUDSON LOGISTICS CENTER		151010101	FIG. 4
	HUDSON HILLSBOROUGH COUNTY NEW HAMPSHIRE		Date	
			08/10/2022	
		Checked By	Sheet 4 of 12	
		MGP		

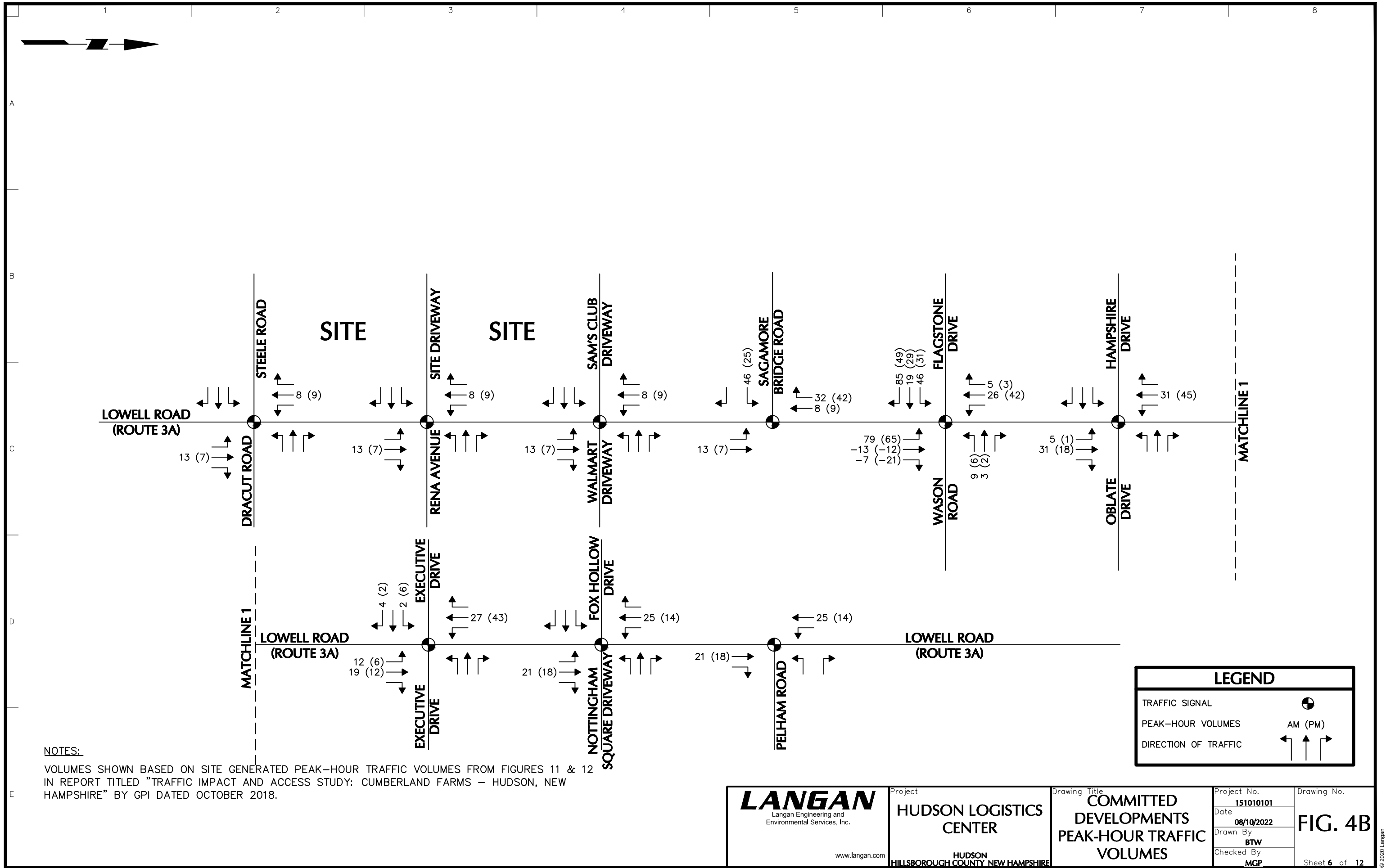


**NOTES:**

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	

 Langan Engineering and Environmental Services, Inc. www.langan.com	Project	Drawing Title	Project No.	Drawing No.
	HUDSON LOGISTICS CENTER HUDSON HILLSBOROUGH COUNTY NEW HAMPSHIRE	2024 AMBIENT GROWTH PEAK-HOUR TRAFFIC VOLUMES	151010101 08/10/2022 Drawn By: BTW Checked By: MGP	FIG. 4A Sheet 5 of 12

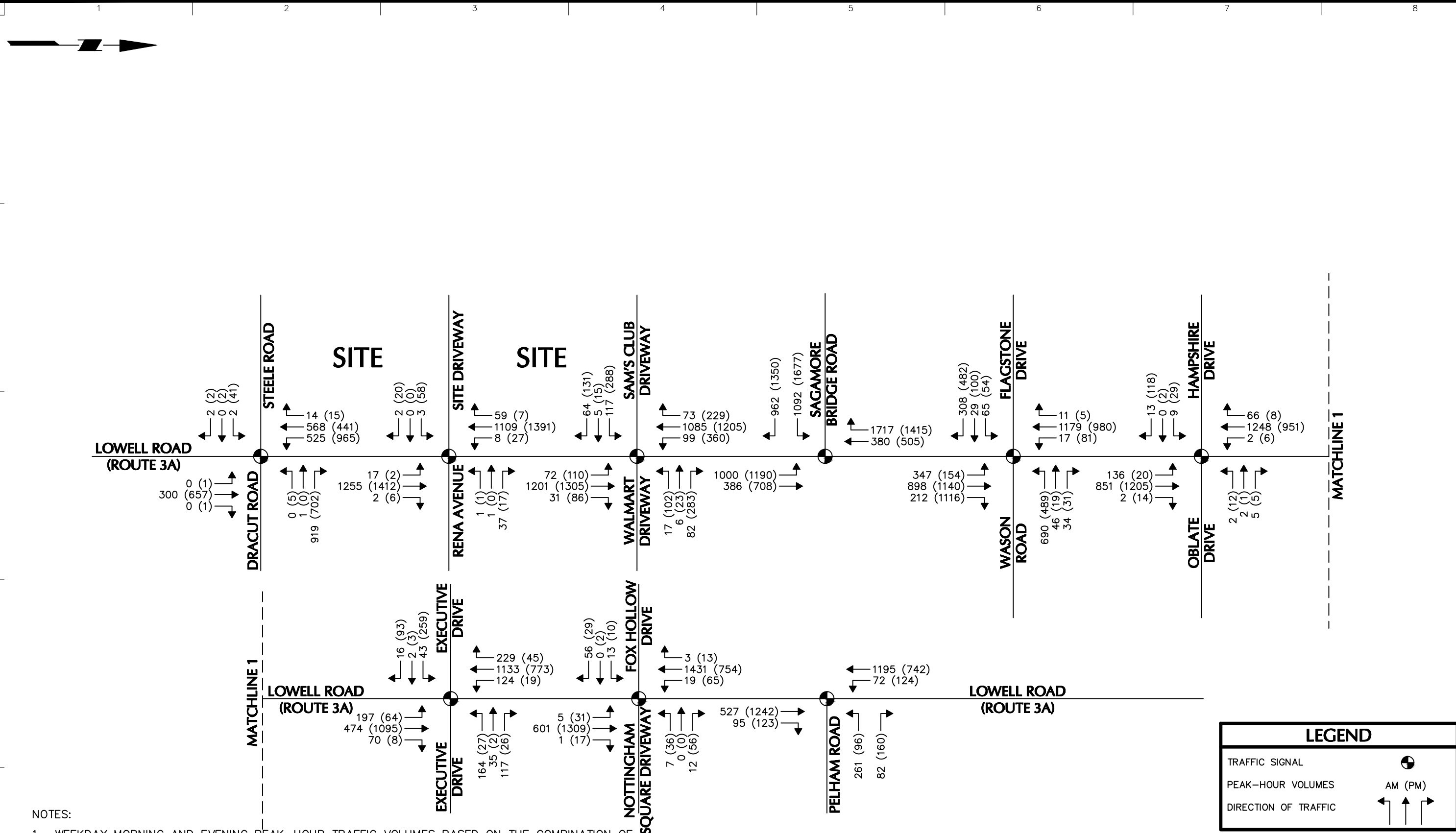


**NOTES:**  
 VOLUMES SHOWN BASED ON SITE GENERATED PEAK-HOUR TRAFFIC VOLUMES FROM FIGURES 11 & 12 IN REPORT TITLED "TRAFFIC IMPACT AND ACCESS STUDY: CUMBERLAND FARMS - HUDSON, NEW HAMPSHIRE" BY GPI DATED OCTOBER 2018.

**LEGEND**

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

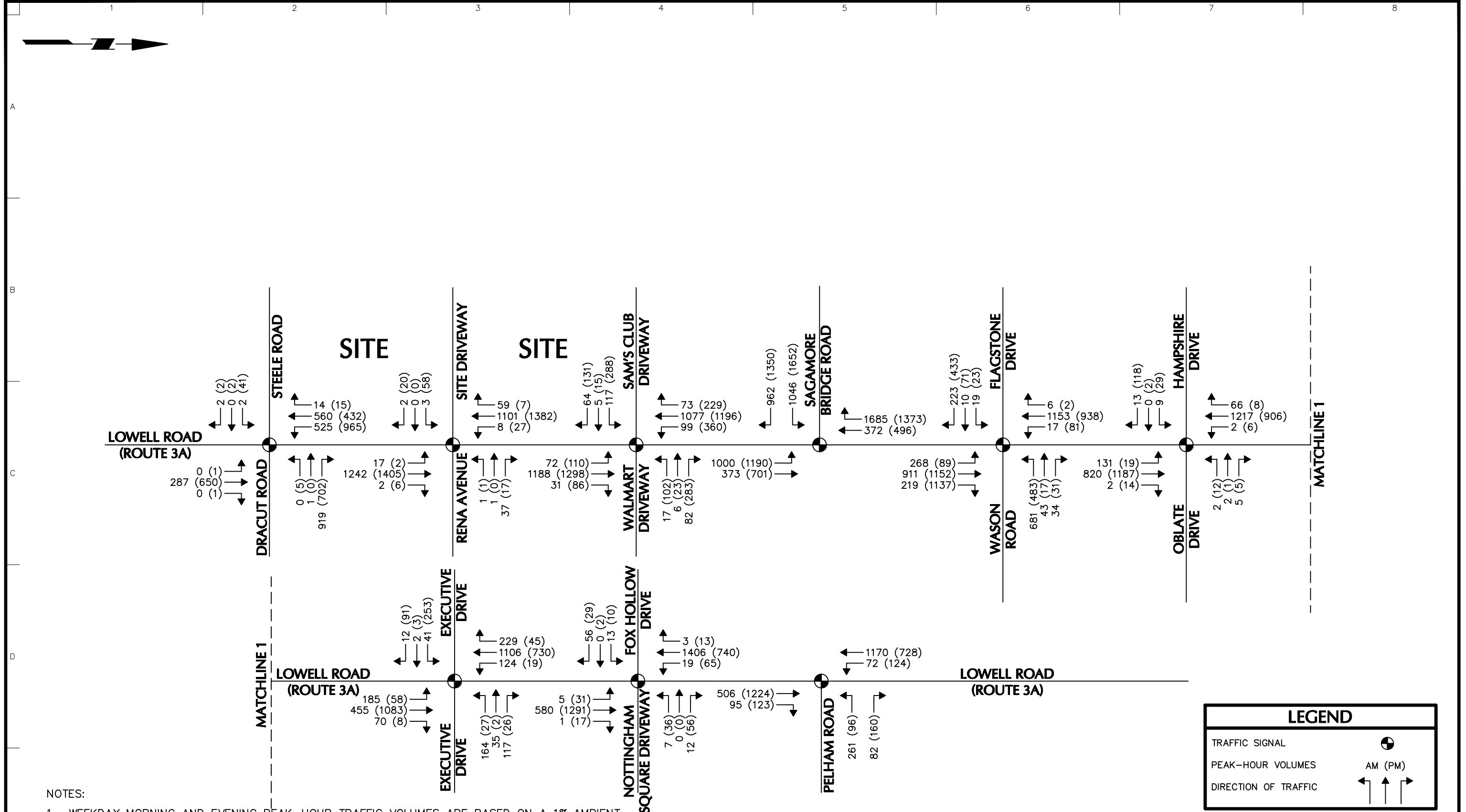
 Langan Engineering and Environmental Services, Inc. www.langan.com	Project <b>HUDSON LOGISTICS CENTER</b> HUDSON HILLSBOROUGH COUNTY NEW HAMPSHIRE	Drawing Title <b>COMMITTED DEVELOPMENTS PEAK-HOUR TRAFFIC VOLUMES</b>	Project No. 151010101	Drawing No. <b>FIG. 4B</b>
	Date 08/10/2022	Drawn By BTW	Checked By MGP	Sheet 6 of 12



- 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	

 Langan Engineering and Environmental Services, Inc. <a href="http://www.langan.com">www.langan.com</a>	Project <b>HUDSON LOGISTICS CENTER</b> HUDSON HILLSBOROUGH COUNTY NEW HAMPSHIRE	Drawing Title <b>2034 NO-BUILD PEAK-HOUR TRAFFIC VOLUMES</b>	Project No. <b>151010101</b>	Drawing No. <b>FIG. 5</b>
			Date <b>08/10/2022</b>	Sheet 7 of 12
			Drawn By <b>CJM</b>	
			Checked By <b>MGP</b>	

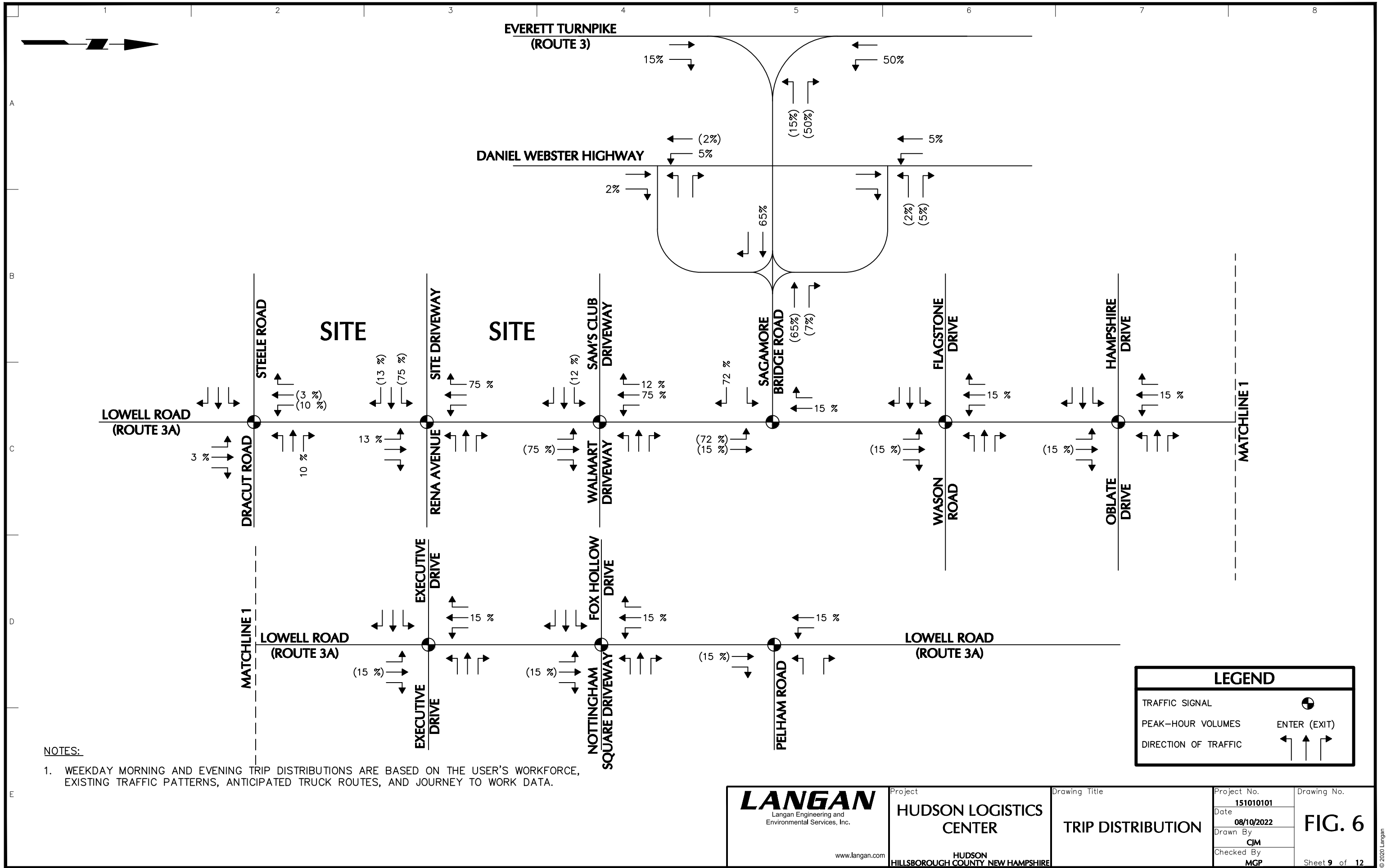


- NOTES:
1. WEEKDAY MORNING AND EVENING PEAK-HOUR TRAFFIC VOLUMES ARE BASED ON A 1% AMBIENT GROWTH RATE APPLIED TO THE TRAFFIC VOLUMES SHOWN IN FIGURE 3 OF THIS REPORT.
  2. MORNING PEAK-HOUR: 7:15 A.M. - 8:15 A.M.
  3. EVENING PEAK-HOUR: 4:30 P.M. - 5:30 P.M.

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

 Langan Engineering and Environmental Services, Inc. www.langan.com	Project <b>HUDSON LOGISTICS CENTER</b> HUDSON HILLSBOROUGH COUNTY NEW HAMPSHIRE	Drawing Title <b>2034 AMBIENT GROWTH PEAK-HOUR TRAFFIC VOLUMES</b>	Project No. <b>151010101</b>	Drawing No. <b>FIG. 5A</b>
			Date <b>08/10/2022</b>	Sheet <b>8</b> of <b>12</b>
			Drawn By <b>BTW</b>	
			Checked By <b>MGP</b>	



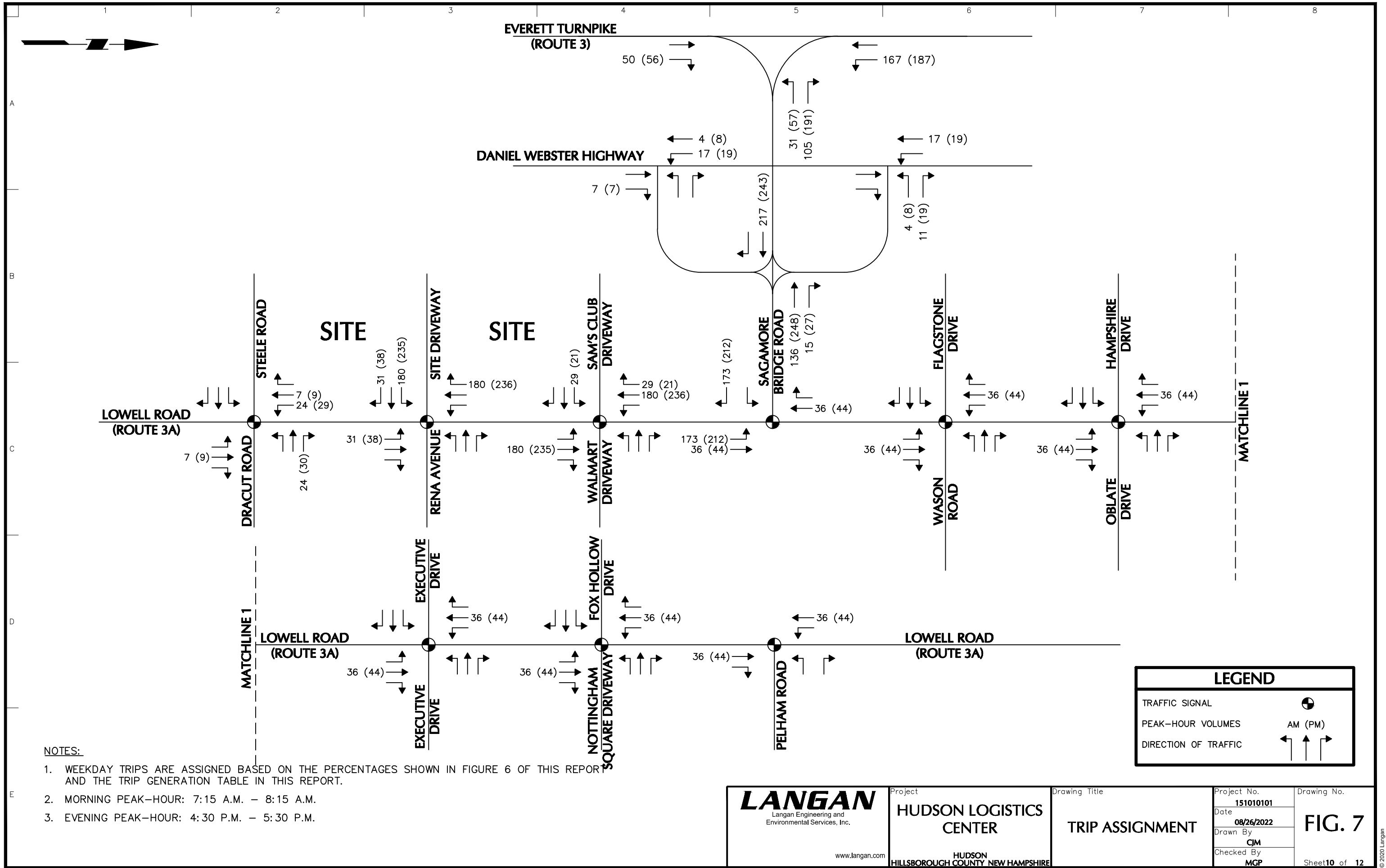


**NOTES:**

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.

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

 Langan Engineering and Environmental Services, Inc. www.langan.com	Project <b>HUDSON LOGISTICS CENTER</b> HUDSON HILLSBOROUGH COUNTY NEW HAMPSHIRE	Drawing Title <b>TRIP DISTRIBUTION</b>	Project No. <b>151010101</b>	Drawing No. <b>FIG. 6</b>
	Date <b>08/10/2022</b>	Drawn By <b>CJM</b>	Checked By <b>MGP</b>	Sheet <b>9</b> of <b>12</b>

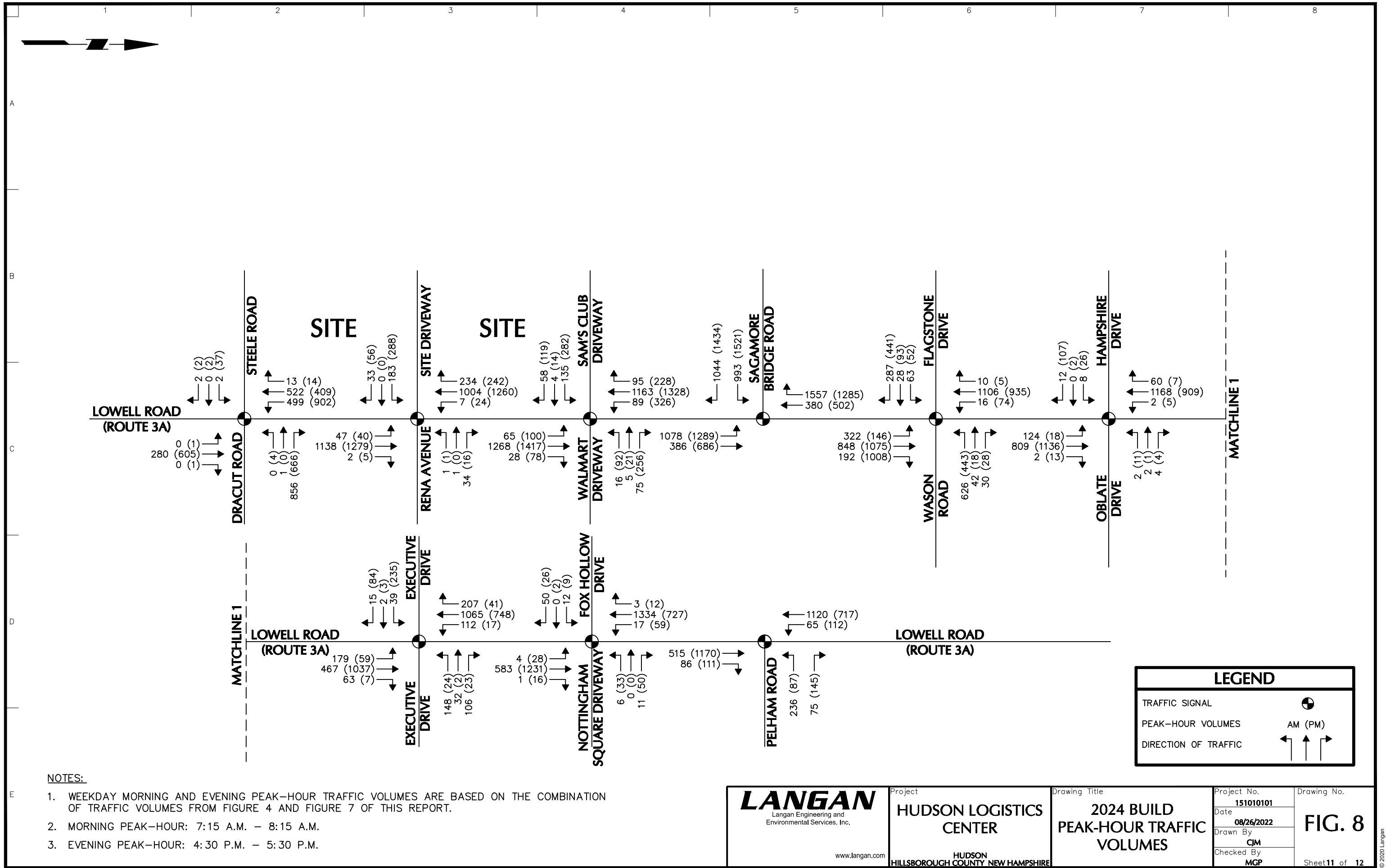


**NOTES:**

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.

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

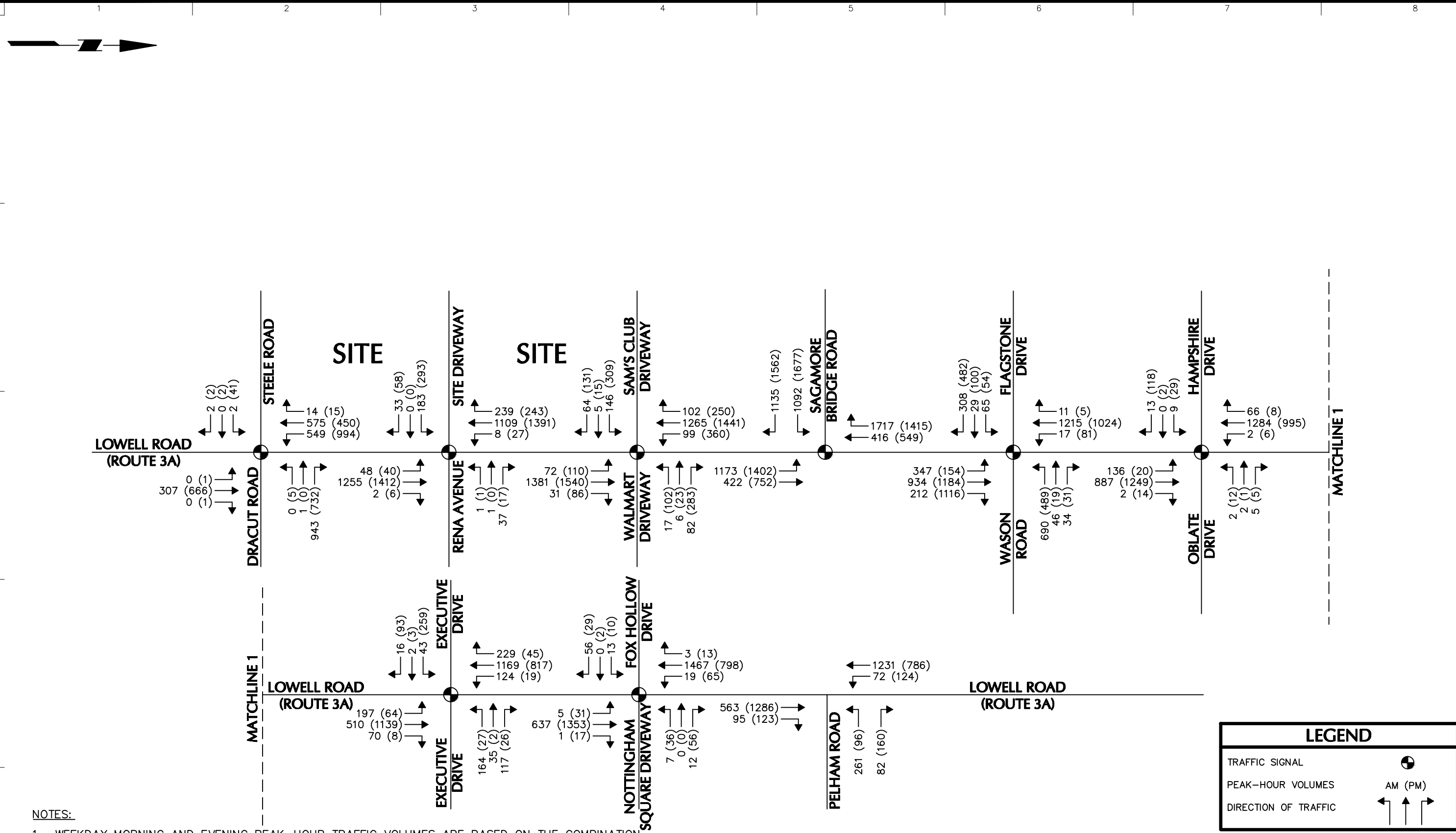
 Langan Engineering and Environmental Services, Inc. www.langan.com	Project <b>HUDSON LOGISTICS CENTER</b> HUDSON HILLSBOROUGH COUNTY NEW HAMPSHIRE	Drawing Title <b>TRIP ASSIGNMENT</b>	Project No. <b>151010101</b>	Drawing No. <b>FIG. 7</b>
	Date <b>08/26/2022</b>	Drawn By <b>CJM</b>	Checked By <b>MGP</b>	Sheet <b>10</b> of <b>12</b>



**NOTES:**

- 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.
- MORNING PEAK-HOUR: 7:15 A.M. – 8:15 A.M.
- EVENING PEAK-HOUR: 4:30 P.M. – 5:30 P.M.

 Langan Engineering and Environmental Services, Inc. www.langan.com	Project	Drawing Title	Project No.	Drawing No.
	HUDSON LOGISTICS CENTER HUDSON HILLSBOROUGH COUNTY NEW HAMPSHIRE	2024 BUILD PEAK-HOUR TRAFFIC VOLUMES	151010101 Date: 08/26/2022 Drawn By: CJM Checked By: MGP	FIG. 8 Sheet 11 of 12



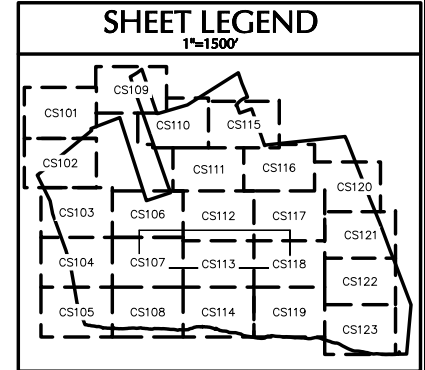
- NOTES:**
1. WEEKDAY MORNING AND EVENING PEAK-HOUR TRAFFIC VOLUMES ARE BASED ON THE COMBINATION OF TRAFFIC VOLUMES FROM FIGURE 5 AND FIGURE 7 OF THIS REPORT.
  2. MORNING PEAK-HOUR: 7:15 A.M. - 8:15 A.M.
  3. EVENING PEAK-HOUR: 4:30 P.M. - 5:30 P.M.

 Langan Engineering and Environmental Services, Inc. www.langan.com	Project <b>HUDSON LOGISTICS CENTER</b> HUDSON HILLSBOROUGH COUNTY NEW HAMPSHIRE	Drawing Title <b>2034 BUILD PEAK-HOUR TRAFFIC VOLUMES</b>	Project No. <b>151010101</b>	Drawing No. <b>FIG. 9</b>
	Date <b>08/10/2022</b>	Drawn By <b>CJM</b>	Checked By <b>MGP</b>	Sheet <b>12</b> of <b>12</b>

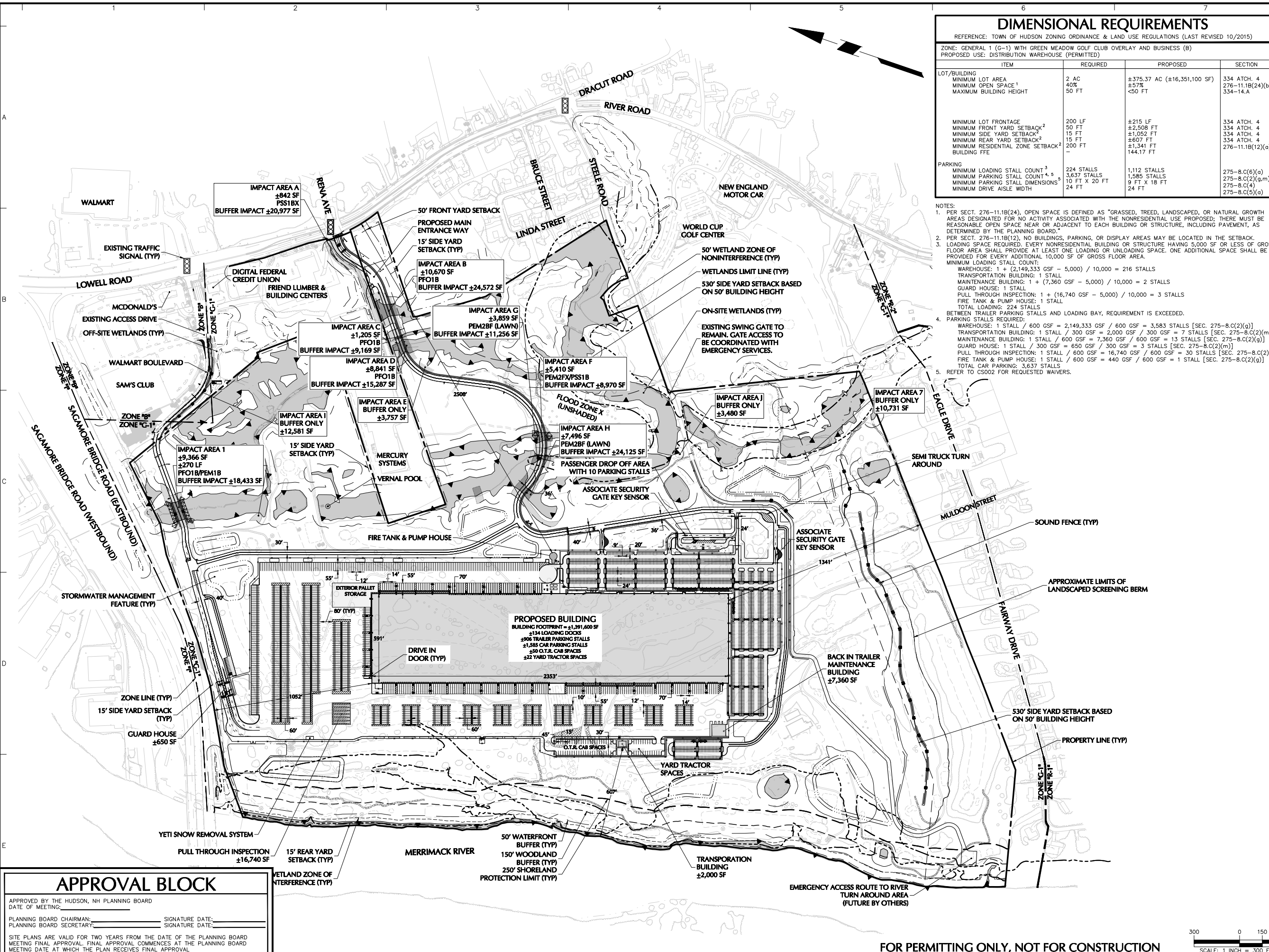
**Appendix A**

**Overall Site Plan & Detailed Roadway Improvements Plans**

DIMENSIONAL REQUIREMENTS			
REFERENCE: TOWN OF HUDSON ZONING ORDINANCE & LAND USE REGULATIONS (LAST REVISED 10/2015)			
ZONE: GENERAL 1 (G-1) WITH GREEN MEADOW GOLF CLUB OVERLAY AND BUSINESS (B)			
PROPOSED USE: DISTRIBUTION WAREHOUSE (PERMITTED)			
ITEM	REQUIRED	PROPOSED	SECTION
LOT/BUILDING			
MINIMUM LOT AREA	2 AC	±375.37 AC (±16,351,100 SF)	334 ATCH. 4
MINIMUM OPEN SPACE <sup>1</sup>	40%	±57%	276-11.1B(24)(b)
MAXIMUM BUILDING HEIGHT	50 FT	<50 FT	334-14.A
MINIMUM LOT FRONTAGE	200 LF	±215 LF	334 ATCH. 4
MINIMUM FRONT YARD SETBACK <sup>2</sup>	50 FT	±2,508 FT	334 ATCH. 4
MINIMUM SIDE YARD SETBACK <sup>2</sup>	15 FT	±1,052 FT	334 ATCH. 4
MINIMUM REAR YARD SETBACK <sup>2</sup>	15 FT	±607 FT	334 ATCH. 4
MINIMUM RESIDENTIAL ZONE SETBACK <sup>2</sup>	200 FT	±1,341 FT	276-11.1B(12)(g)
BUILDING FFE	-	144.17 FT	-
PARKING			
MINIMUM LOADING STALL COUNT <sup>3</sup>	224 STALLS	1,112 STALLS	275-8.C(6)(a)
MINIMUM PARKING STALL COUNT <sup>4,5</sup>	3,637 STALLS	1,585 STALLS	275-8.C(2)(g,m)
MINIMUM PARKING STALL DIMENSIONS <sup>5</sup>	10 FT X 20 FT	9 FT X 18 FT	275-8.C(4)
MINIMUM DRIVE AISLE WIDTH	24 FT	24 FT	275-8.C(5)(a)



- NOTES:
- PER SECT. 276-11.1B(24), OPEN SPACE IS DEFINED AS "GRASSED, TREED, LANDSCAPED, OR NATURAL GROWTH AREAS DESIGNATED FOR NO ACTIVITY ASSOCIATED WITH THE NONRESIDENTIAL USE PROPOSED; THERE MUST BE REASONABLE OPEN SPACE NEAR OR ADJACENT TO EACH BUILDING OR STRUCTURE, INCLUDING PAVEMENT, AS DETERMINED BY THE PLANNING BOARD."
  - PER SECT. 276-11.1B(12), NO BUILDINGS, PARKING, OR DISPLAY AREAS MAY BE LOCATED IN THE SETBACK.
  - LOADING SPACE REQUIRED: EVERY NONRESIDENTIAL BUILDING OR STRUCTURE HAVING 5,000 SF OR LESS OF GROSS FLOOR AREA SHALL PROVIDE AT LEAST ONE LOADING OR UNLOADING SPACE. ONE ADDITIONAL SPACE SHALL BE PROVIDED FOR EVERY ADDITIONAL 10,000 SF OF GROSS FLOOR AREA.  
MINIMUM LOADING STALL COUNT:  
WAREHOUSE: 1 + (2,149,333 GSF - 5,000) / 10,000 = 216 STALLS  
TRANSPORTATION BUILDING: 1 STALL  
MAINTENANCE BUILDING: 1 + (7,360 GSF - 5,000) / 10,000 = 2 STALLS  
GUARD HOUSE: 1 STALL  
PULL THROUGH INSPECTION: 1 + (16,740 GSF - 5,000) / 10,000 = 3 STALLS  
FIRE TANK & PUMP HOUSE: 1 STALL  
TOTAL LOADING: 224 STALLS  
BETWEEN TRAILER PARKING STALLS AND LOADING BAY, REQUIREMENT IS EXCEEDED.
  - PARKING STALLS REQUIRED:  
WAREHOUSE: 1 STALL / 600 GSF = 2,149,333 GSF / 600 GSF = 3,583 STALLS [SEC. 275-8.C(2)(g)]  
TRANSPORTATION BUILDING: 1 STALL / 300 GSF = 2,000 GSF / 300 GSF = 7 STALLS [SEC. 275-8.C(2)(m)]  
MAINTENANCE BUILDING: 1 STALL / 600 GSF = 7,360 GSF / 600 GSF = 13 STALLS [SEC. 275-8.C(2)(g)]  
GUARD HOUSE: 1 STALL / 300 GSF = 650 GSF / 300 GSF = 3 STALLS [SEC. 275-8.C(2)(m)]  
PULL THROUGH INSPECTION: 1 STALL / 600 GSF = 16,740 GSF / 600 GSF = 30 STALLS [SEC. 275-8.C(2)(g)]  
FIRE TANK & PUMP HOUSE: 1 STALL / 600 GSF = 440 GSF / 600 GSF = 1 STALL [SEC. 275-8.C(2)(g)]  
TOTAL CAR PARKING: 3,637 STALLS
  - REFER TO CS002 FOR REQUESTED WAIVERS.



**APPROVAL BLOCK**

APPROVED BY THE HUDSON, NH PLANNING BOARD  
DATE OF MEETING: \_\_\_\_\_

PLANNING BOARD CHAIRMAN: \_\_\_\_\_ SIGNATURE DATE: \_\_\_\_\_  
PLANNING BOARD SECRETARY: \_\_\_\_\_ SIGNATURE DATE: \_\_\_\_\_

SITE PLANS ARE VALID FOR TWO YEARS FROM THE DATE OF THE PLANNING BOARD MEETING FINAL APPROVAL. FINAL APPROVAL COMMENCES AT THE PLANNING BOARD MEETING DATE AT WHICH THE PLAN RECEIVES FINAL APPROVAL.

Date	Description	No.
Revisions		

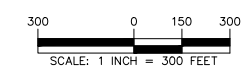
**LANGAN**  
Langan Engineering and Environmental Services, Inc.  
100 CAMBRIDGE STREET, SUITE 1310  
Boston, MA 02114  
T: 617.824.9100 F: 617.824.9101 www.langan.com

Project  
**HUDSON LOGISTICS CENTER**  
MAP No. 239, LOT No. 1  
HUDSON  
HILLSBOROUGH NEW HAMPSHIRE  
Drawing Title

**OVERALL SITE PLAN**

Project No. 151010101 Drawing No. CS100  
Date 08-22-2022  
Drawn By JNW  
Checked By FH

FOR PERMITTING ONLY, NOT FOR CONSTRUCTION



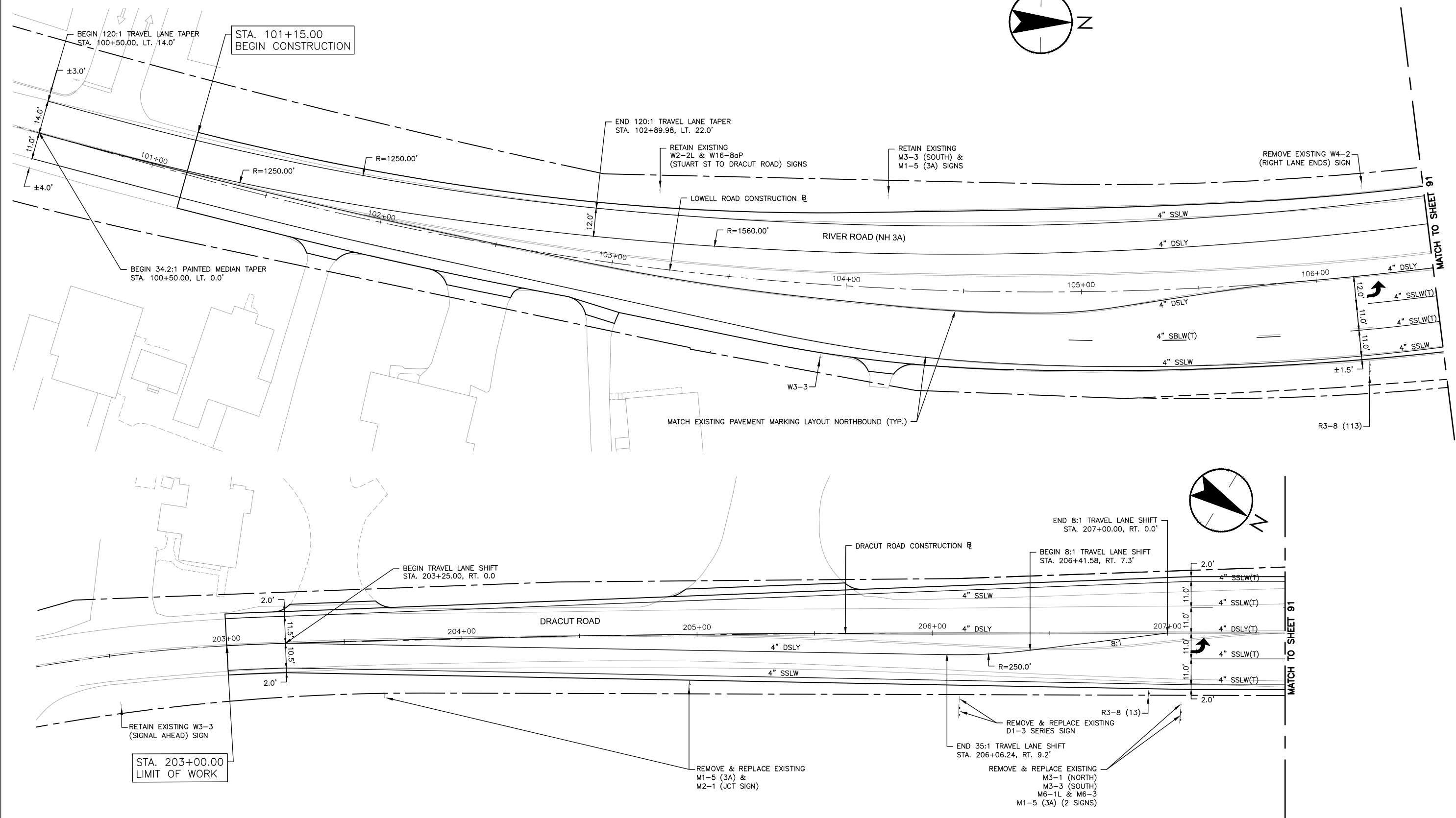
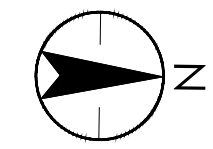
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SHEET CHECKED	DATE	DATE
AS BUILT DETAILS	DATE	DATE

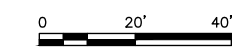
REVISIONS AFTER PROPOSAL	STATION	DESCRIPTION

NOTEBOOKS	BOOK	PAGE



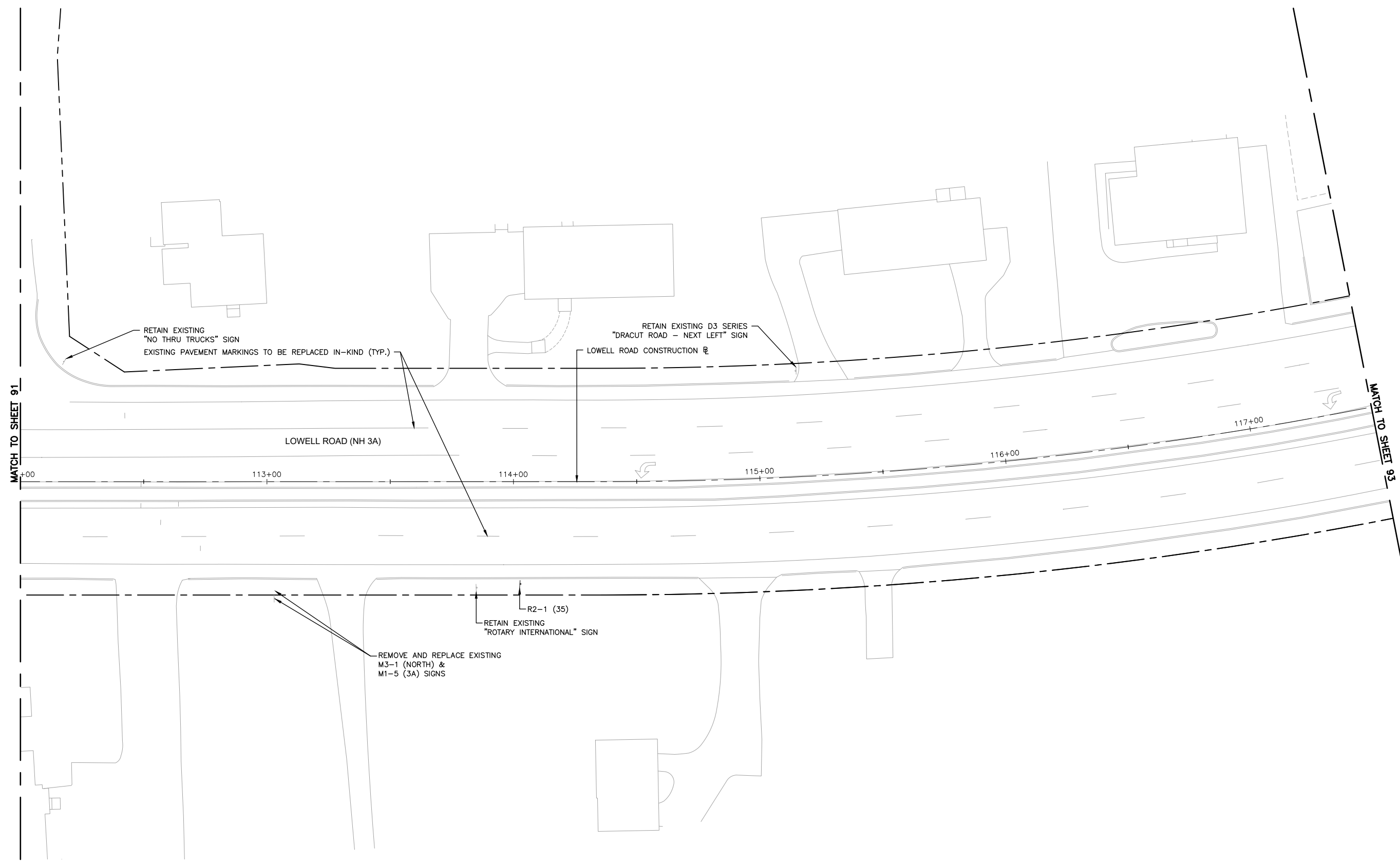
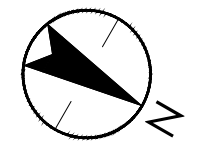
- PAVEMENT MARKING NOTES:**
- ALL SYMBOLS, WORDS, TRANSVERSE MARKINGS (STOP BARS, CROSSWALK LINES, AND RAILROAD SYMBOLS), LANE LINES AND ALL OTHER MARKINGS NOTED WITH (T) SHALL BE THERMOPLASTIC.
  - THE CONTRACTOR SHALL CONTACT JULIE MATHEWS - NHDOT BUREAU OF TRAFFIC AT (603)271-8011 TWO WEEKS PRIOR TO PAVEMENT MARKINGS.
  - REPLACE WORDS/SYMBOLS PER LATEST NHDOT STANDARD PLAN SHEETS.
  - PAVEMENT MARKINGS SHALL EXTEND BEYOND PROJECT PAVING LIMITS TO OVERLAP EXISTING MARKINGS DISTURBED BY CONSTRUCTION.



STATE OF NEW HAMPSHIRE			
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN			
<b>PAVEMENT MARKING &amp; SIGNING PLAN</b>			
FEDERAL PROJECT NO.	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
-	-	90	209







MATCH TO SHEET 91

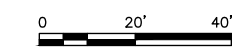
MATCH TO SHEET 93

LOWELL ROAD (NH 3A)

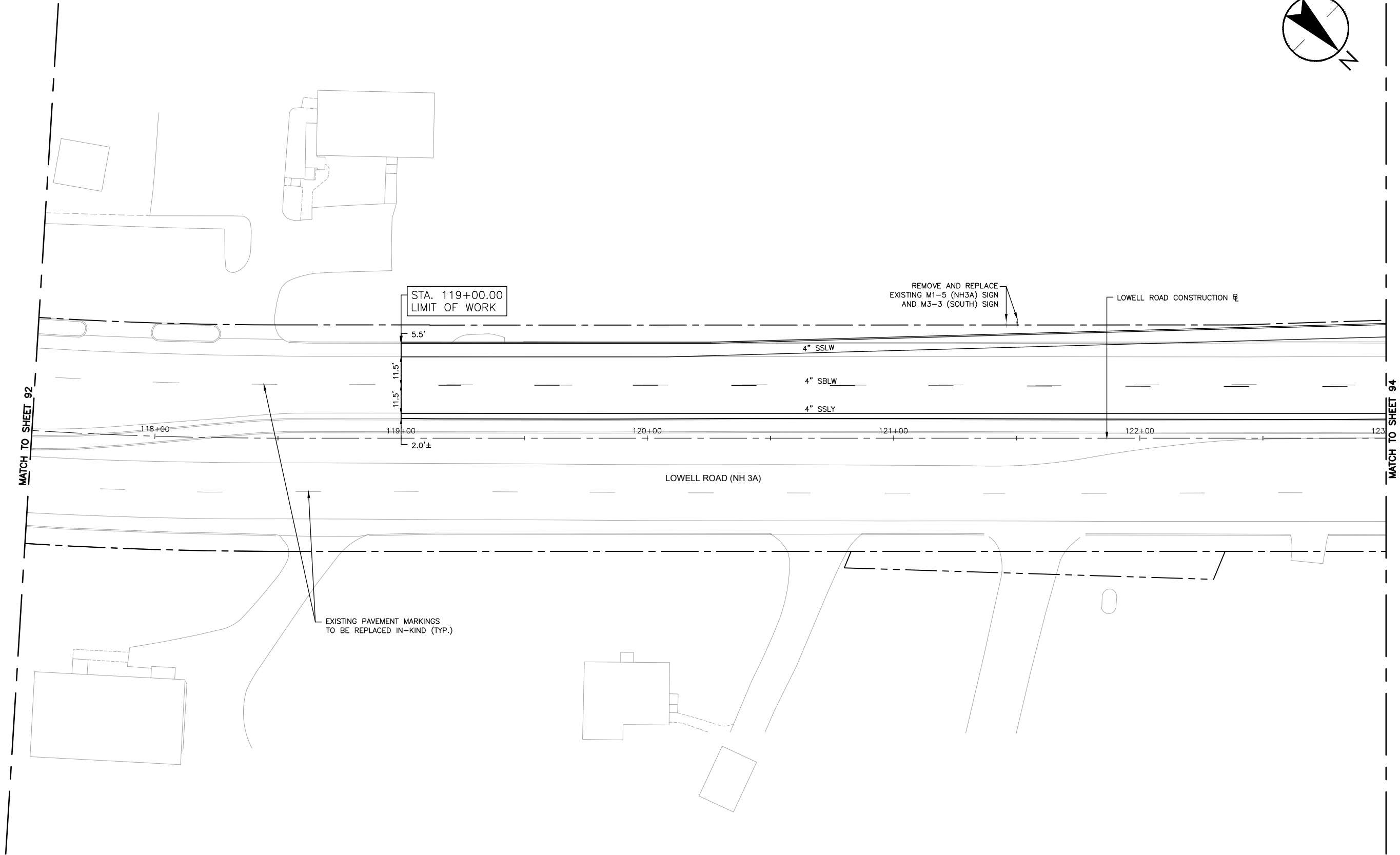
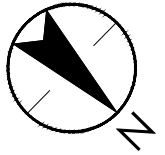
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SHEET CHECKED	08/21	DEM	08/21		
AS BUILT DETAILS					

NOTEBOOKS	
BOOK	PAGE
BOOK	PAGE
BOOK	PAGE

REVISIONS AFTER PROPOSAL			
NUMBER	DATE	STATION	DESCRIPTION



STATE OF NEW HAMPSHIRE			
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN			
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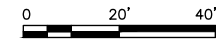
MATCH TO SHEET 92

MATCH TO SHEET 94

REVISIONS AFTER PROPOSAL		STATION	DESCRIPTION
NUMBER	DATE	STATION	DESCRIPTION

NOTEBOOKS	
BOOK	PAGE
BOOK	PAGE
BOOK	PAGE

SDR PROCESSED	DATE	BY
NEW DESIGN	DATE 08/21	TJG
SHEET CHECKED	DATE 08/21	DEM
AS BUILT DETAILS	DATE	



STATE OF NEW HAMPSHIRE			
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN			
<b>PAVEMENT MARKING &amp; SIGNING PLAN</b>			
FEDERAL PROJECT NO.	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
-	-	93	209

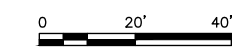
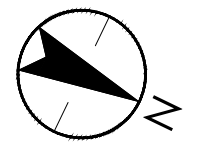
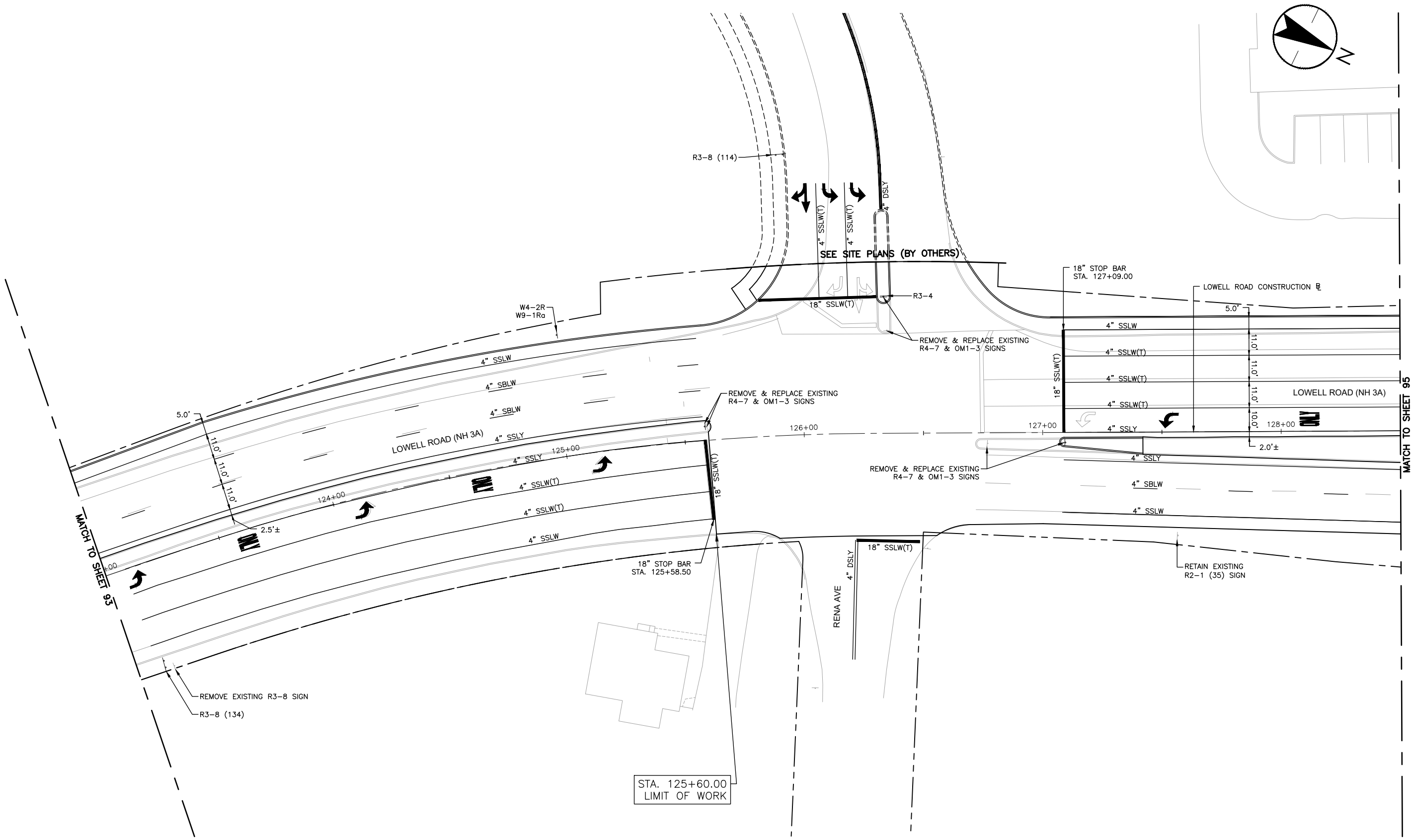
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SHEET CHECKED	08/21	DATE
AS BUILT DETAILS		DESCRIPTION

NOTEBOOKS	REVISIONS AFTER PROPOSAL
BOOK	STATION
BOOK	DATE
BOOK	DESCRIPTION

DATE	DATE	DATE	DATE
08/21	08/21	08/21	08/21
08/21	08/21	08/21	08/21
08/21	08/21	08/21	08/21



STATE OF NEW HAMPSHIRE			
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN			
<b>PAVEMENT MARKING &amp; SIGNING PLAN</b>			
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-	-	94	209

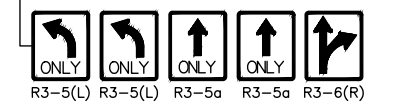
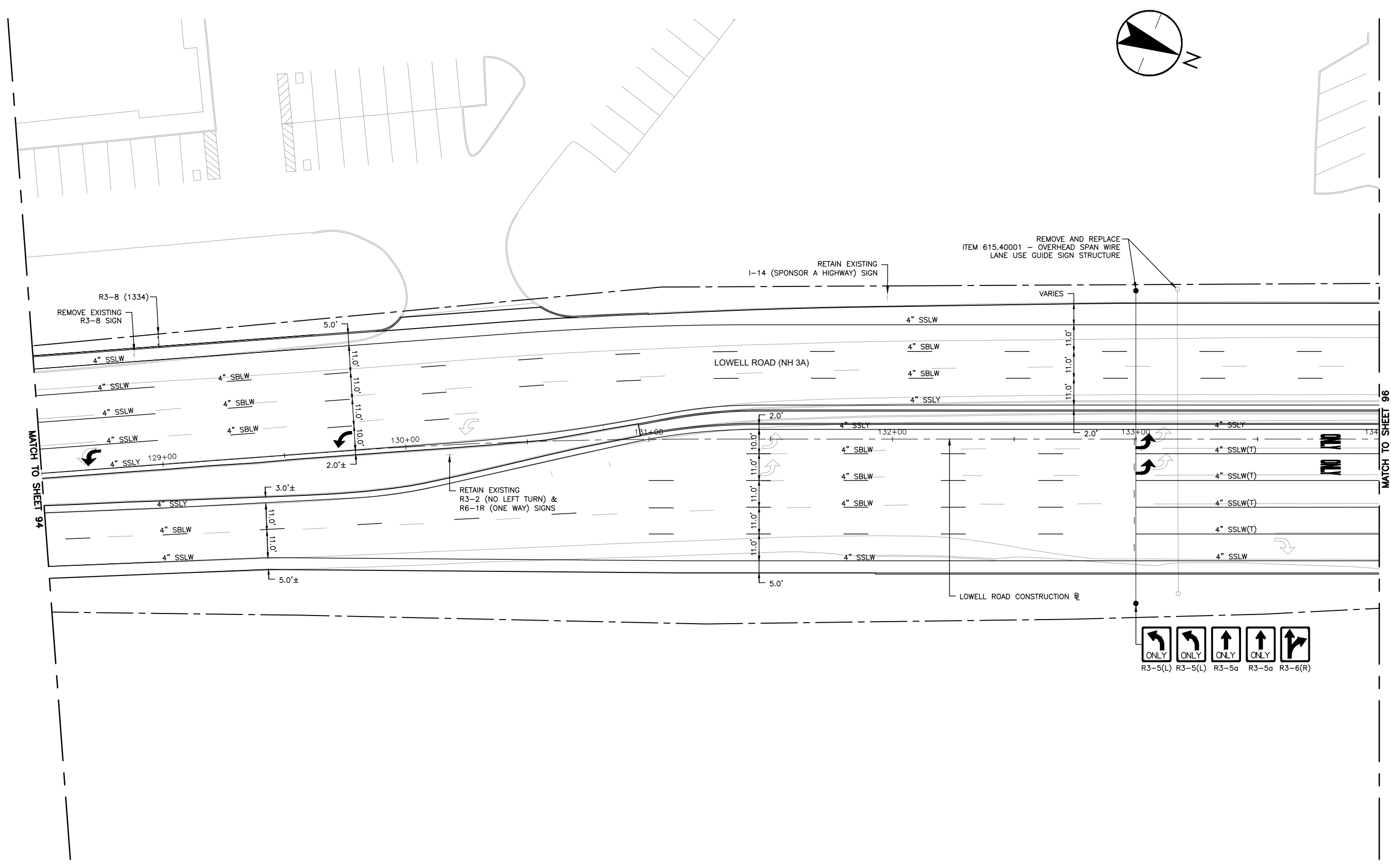
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SHEET CHECKED					
AS BUILT DETAILS					

NUMBER	DATE	STATION	STATION	DESCRIPTION

NOTEBOOKS	PAGE
BOOK	PAGE
BOOK	PAGE
BOOK	PAGE

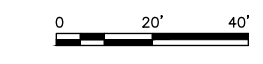
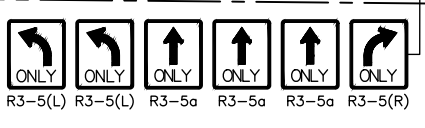
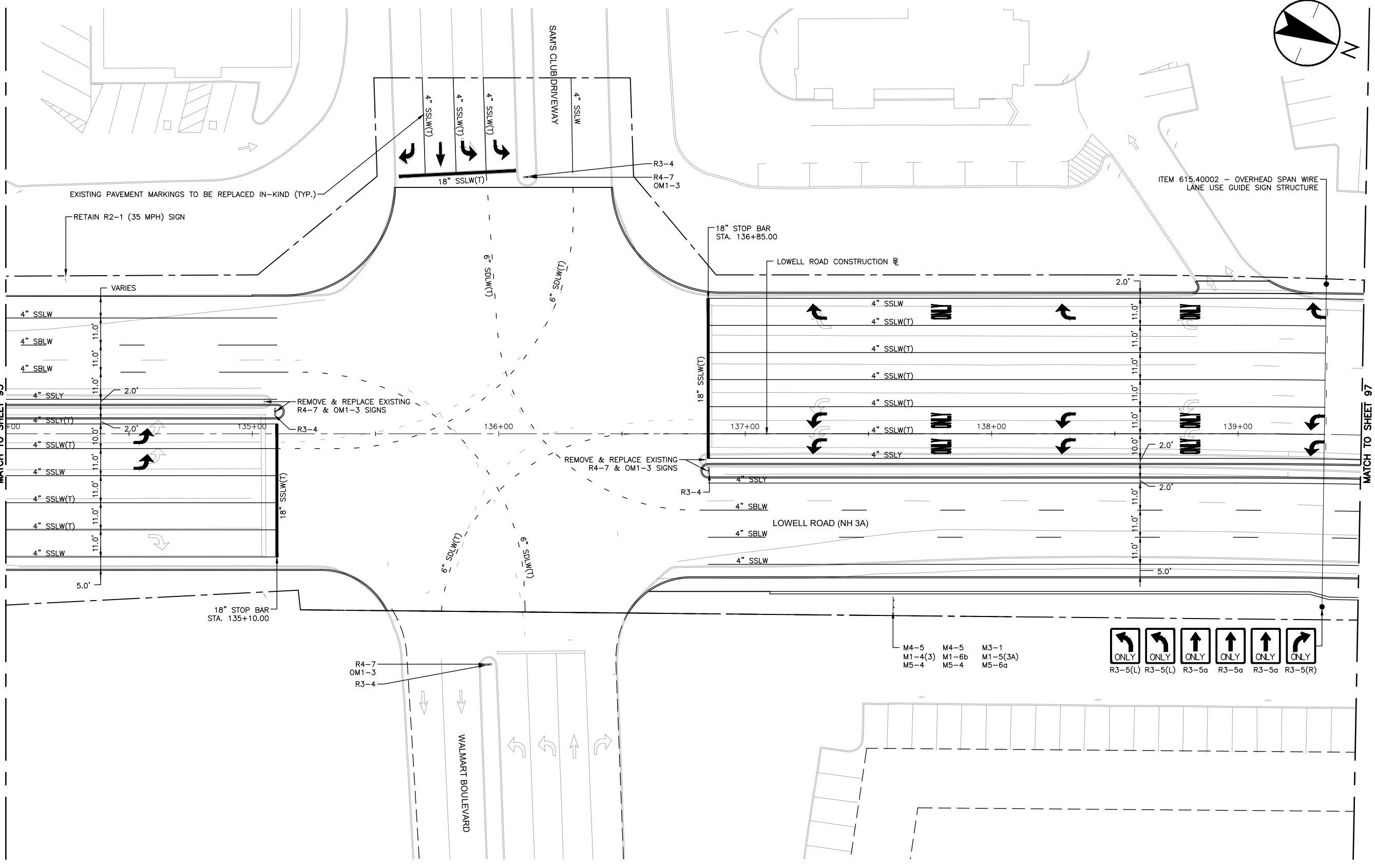


STATE OF NEW HAMPSHIRE			
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN			
<b>PAVEMENT MARKING &amp; SIGNING PLAN</b>			
FEDERAL PROJECT NO.	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
-	-	95	209

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SHEET CHECKED	DEM	DATE	08/21
AS BUILT DETAILS		DATE	

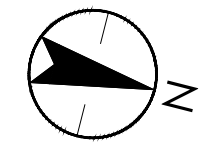
NOTEBOOKS	
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BOOK	PAGE

REVISIONS AFTER PROPOSAL	
NUMBER	DATE
STATION	DESCRIPTION



STATE OF NEW HAMPSHIRE			
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN			
<b>PAVEMENT MARKING &amp; SIGNING</b>			
<b>PLAN</b>			
FEDERAL PROJECT NO.	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
-	-	96	209

SDR PROCESSED	DATE	08/21	
	TJG	DEM	
	NEW DESIGN	SHEET CHECKED	
AS BUILT DETAILS	DATE		
	BOOK	BOOK	
	PAGE	PAGE	
NOTEBOOKS			
NUMBER	DATE	STATION	
REVISIONS AFTER PROPOSAL			
NUMBER	DATE	STATION	DESCRIPTION



RETAIN R3-4 (NO U-TURN) SIGN  
RETAIN R1-2 (YIELD) SIGN

STA. 144+00.00  
LIMIT OF WORK

INSTALL OVERHEAD LANE  
GUIDE SIGN STRUCTURE (OH-1)  
(ITEM 615.10001)

LOWELL ROAD CONSTRUCTION

RETAIN W3-3 (SIGNAL AHEAD WARNING) SIGN

VARIES

4" SSLW  
4" SBLW  
4" SBLW  
4" SSLY

LOWELL ROAD (NH 3A)

4" SBLW  
4" SBLW  
4" SSLW

2.5'  
11.0'  
11.0'  
11.0'  
11.0'

4" SSLY  
4" SSLW(T)  
4" SSLW(T)  
4" SSLW(T)  
4" SSLW

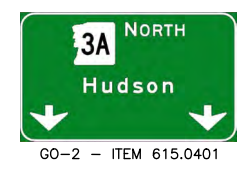
MATCH TO SHEET 96

MATCH TO SHEET 98

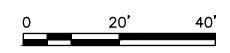
D1-3b

REMOVE OVERHEAD SPAN WIRE  
LANE GUIDE SIGN STRUCTURE

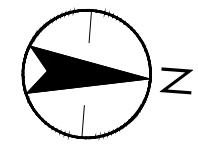
REMOVE EXISTING D3-SERIES SIGN



REMOVE EXISTING R3-8 SIGN



STATE OF NEW HAMPSHIRE			
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN			
<b>PAVEMENT MARKING &amp; SIGNING PLAN</b>			
FEDERAL PROJECT NO.	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
-	-	97	209



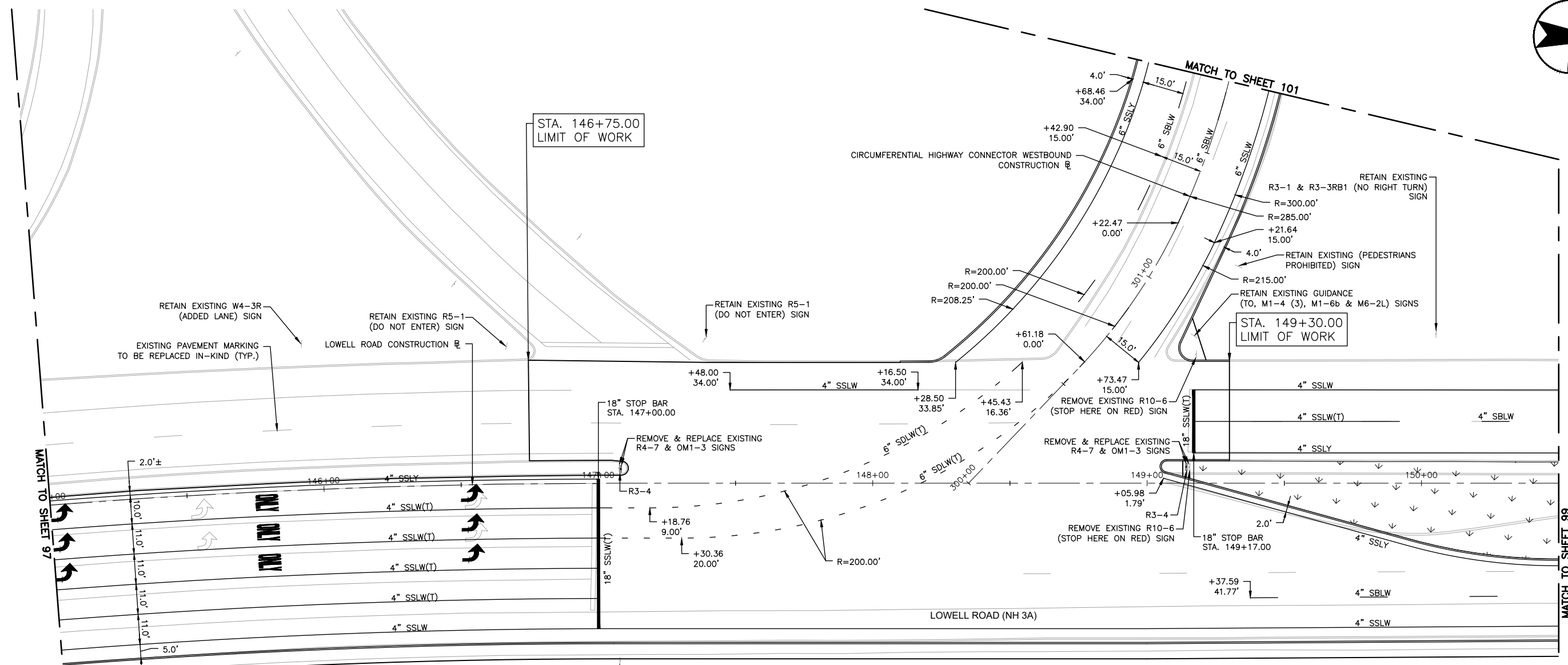
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	TJG	DATE
NEW DESIGN	DATE	08/21
	DEM	DATE
SHEET CHECKED	DATE	
AS BUILT DETAILS	DATE	

REVISIONS AFTER PROPOSAL	STATION	DESCRIPTION

NOTEBOOKS	PAGE
BOOK	PAGE
BOOK	PAGE
BOOK	PAGE



- D1-3(NB)
- M4-5
- M1-4(3)
- M6-1L
- M4-5
- M1-6b
- M6-1L
- M3-1
- M1-5c(3A)
- M6-3



STATE OF NEW HAMPSHIRE			
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN			
<b>PAVEMENT MARKING &amp; SIGNING PLAN</b>			
FEDERAL PROJECT NO.	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
-	-	98	209

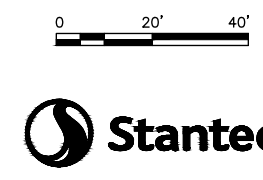
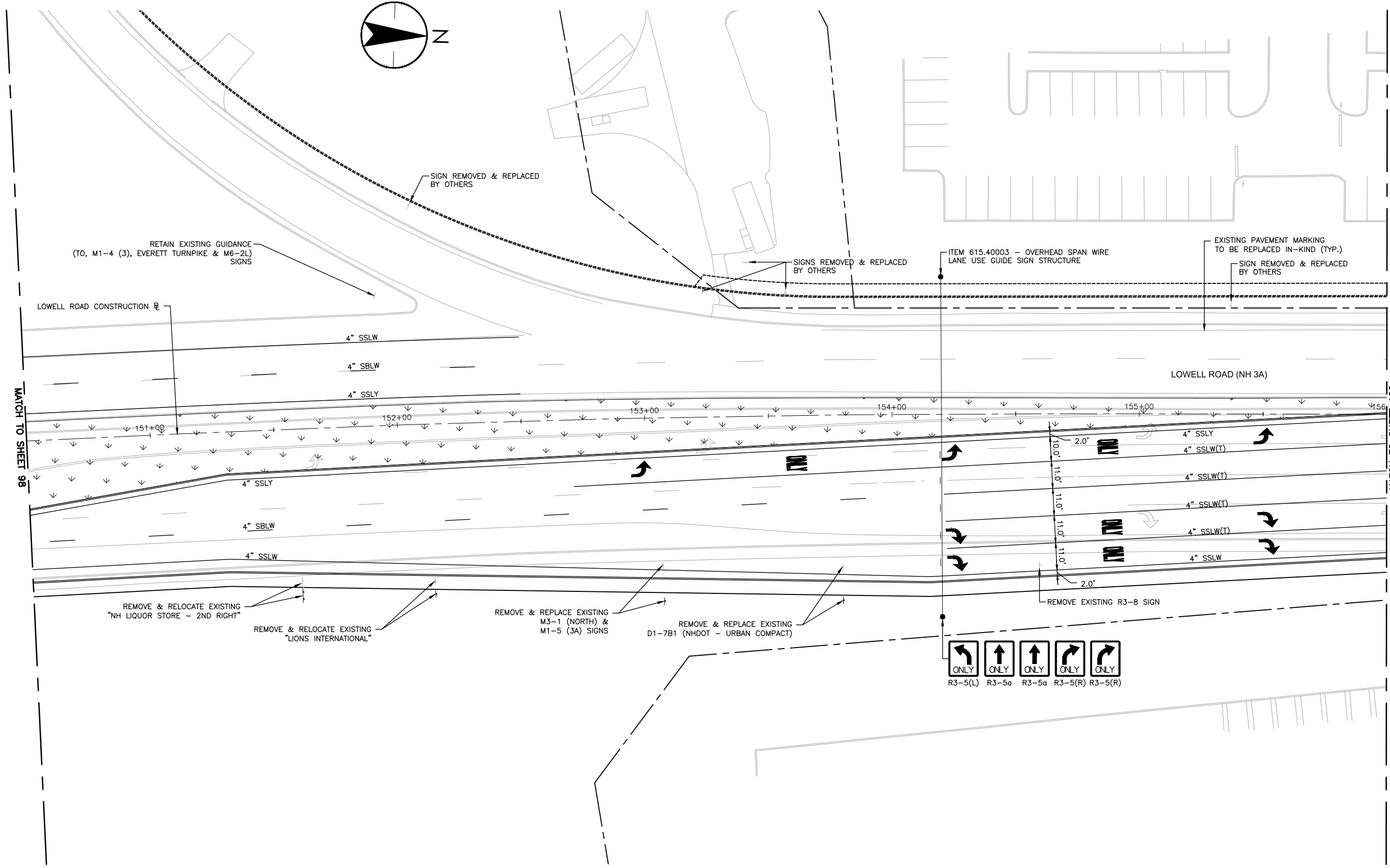
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NEW DESIGN	TJG	DATE	08/21
SHEET CHECKED	DEM	DATE	08/21
AS BUILT DETAILS		DATE	

REVISIONS AFTER PROPOSAL		DESCRIPTION	
NUMBER	DATE	STATION	

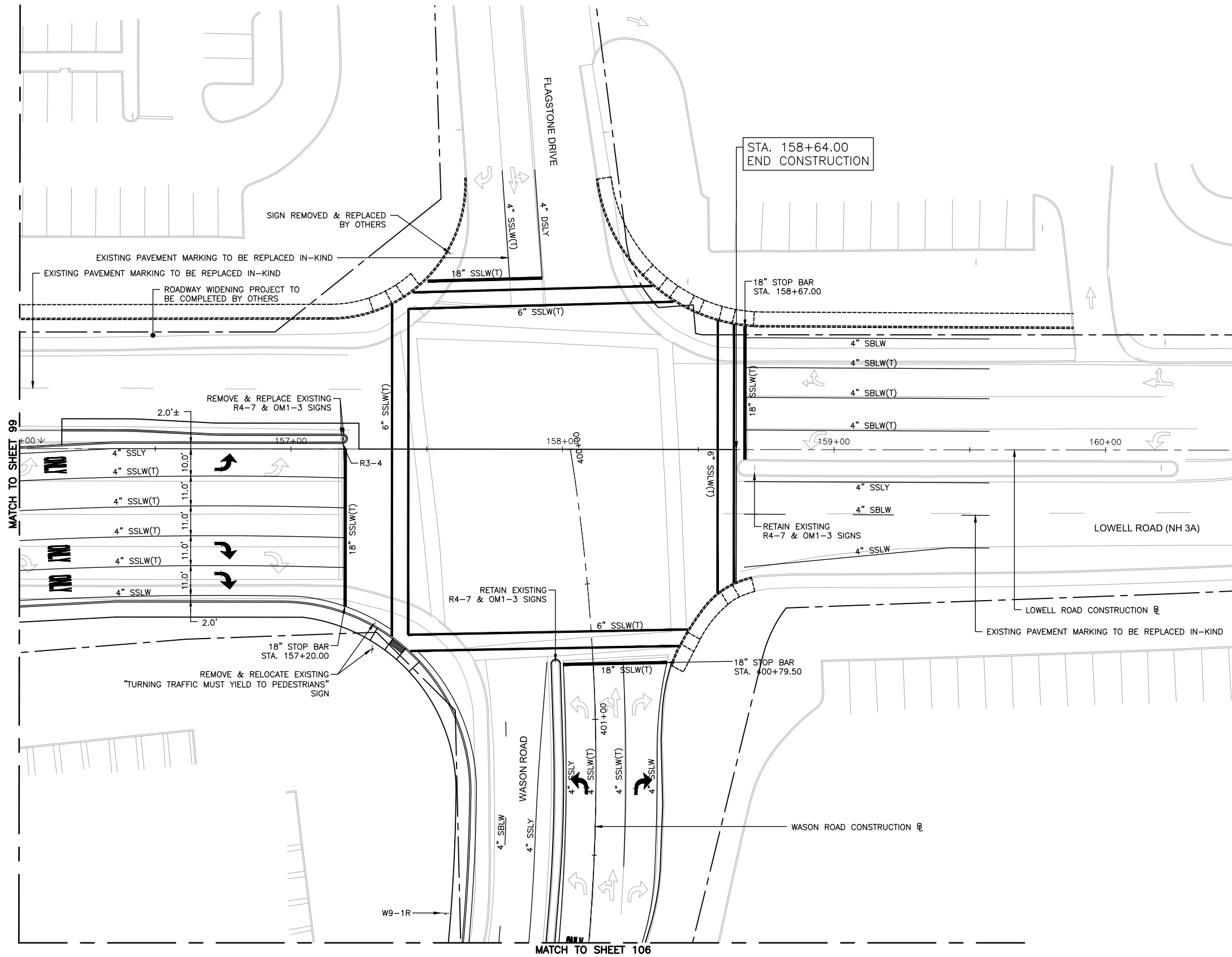
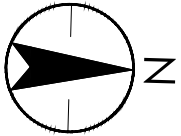
  

NOTEBOOKS		PAGE	
BOOK		PAGE	
BOOK		PAGE	
BOOK		PAGE	



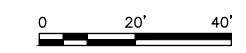
STATE OF NEW HAMPSHIRE			
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN			
<b>PAVEMENT MARKING &amp; SIGNING PLAN</b>			
FEDERAL PROJECT NO.	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
-	-	99	209





MATCH TO SHEET 99

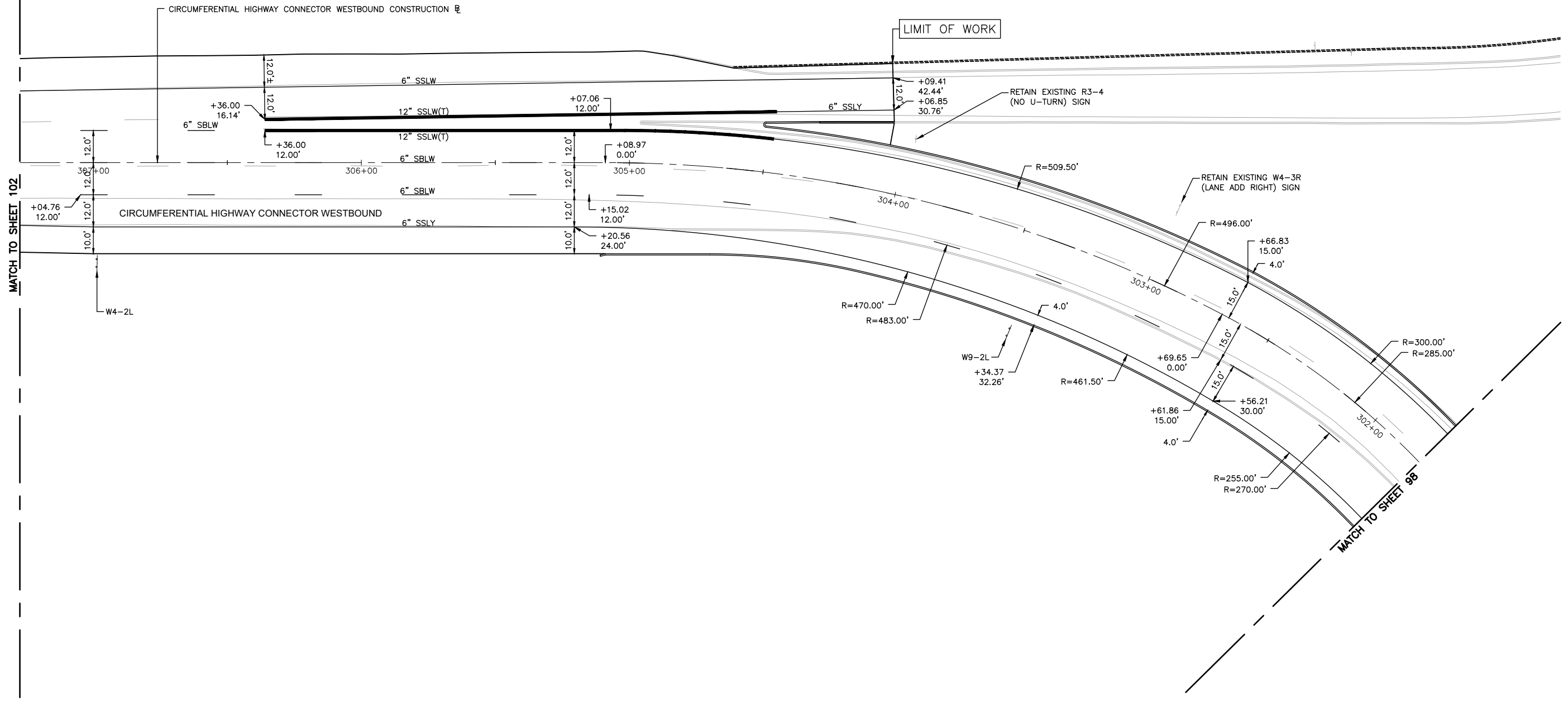
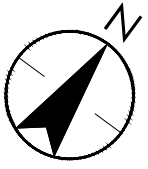
MATCH TO SHEET 106



SDR PROCESSED	TJG	DATE	08/21	REVISIONS AFTER PROPOSAL	STATION	DESCRIPTION
	SHEET CHECKED	DEM	DATE		08/21	
AS BUILT DETAILS		DATE				

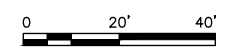
NOTEBOOKS		
BOOK	PAGE	PAGE

STATE OF NEW HAMPSHIRE			
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN			
<b>PAVEMENT MARKING &amp; SIGNING PLAN</b>			
FEDERAL PROJECT NO.	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
-	-	100	209



MATCH TO SHEET 102

MATCH TO SHEET 98



STATE OF NEW HAMPSHIRE			
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN			
<b>PAVEMENT MARKING &amp; SIGNING</b>			
<b>PLAN</b>			
FEDERAL PROJECT NO.	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
-	-	101	209

SDR PROCESSED	DATE	BY	DATE	BY	DATE
NEW DESIGN	08/21	TJG	08/21	DEM	08/21
SHEET CHECKED					
AS BUILT DETAILS					

REVISIONS AFTER PROPOSAL	STATION	DESCRIPTION

NUMBER	DATE	STATION	DESCRIPTION

NOTEBOOKS	BOOK	PAGE

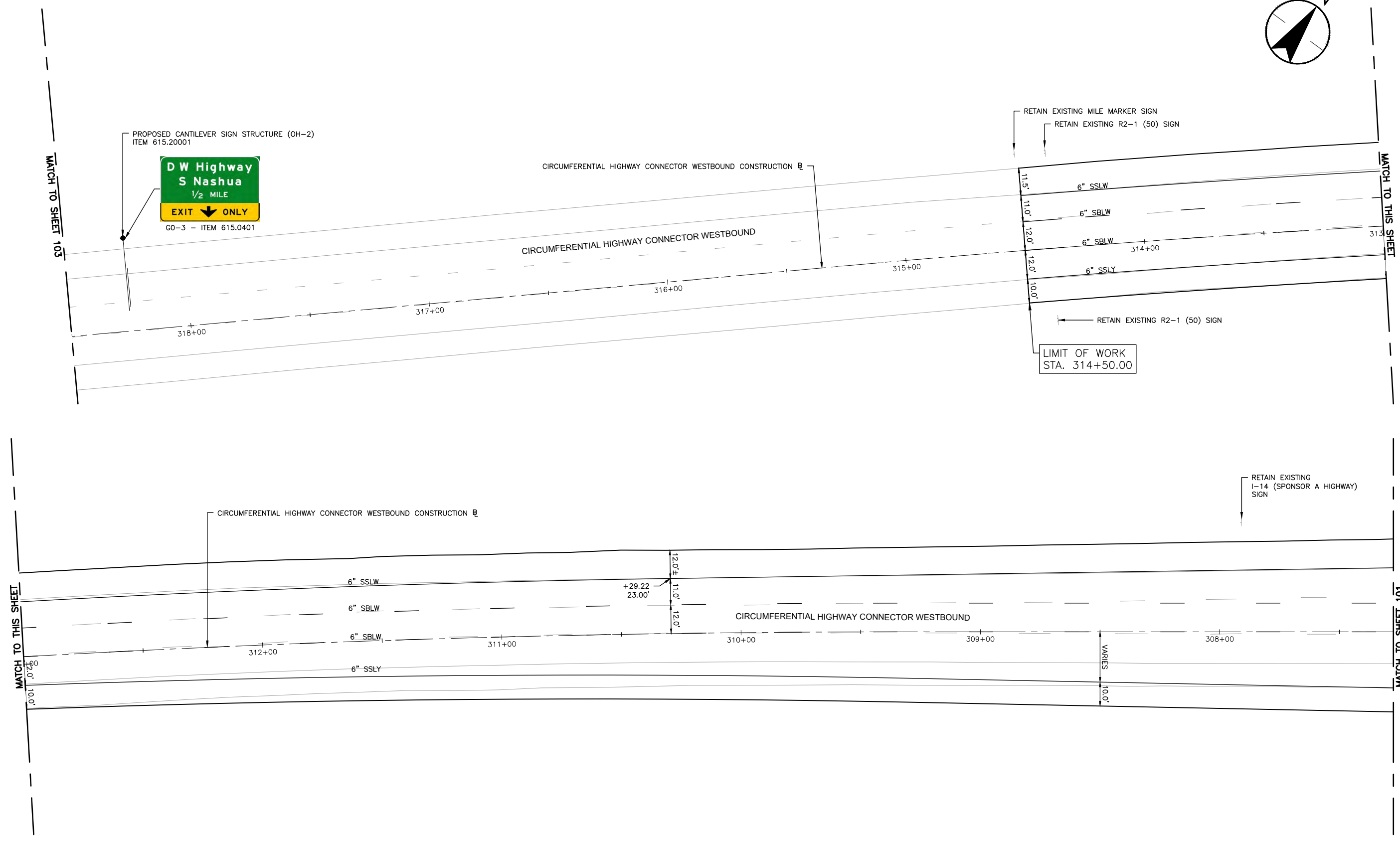
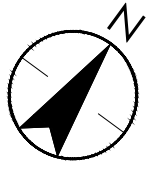
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NEW DESIGN	TJG	08/21			
SHEET CHECKED	DEM	08/21			
AS BUILT DETAILS					

NUMBER	DATE	STATION	STATION

NOTEBOOKS	BOOK	PAGE

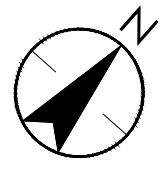
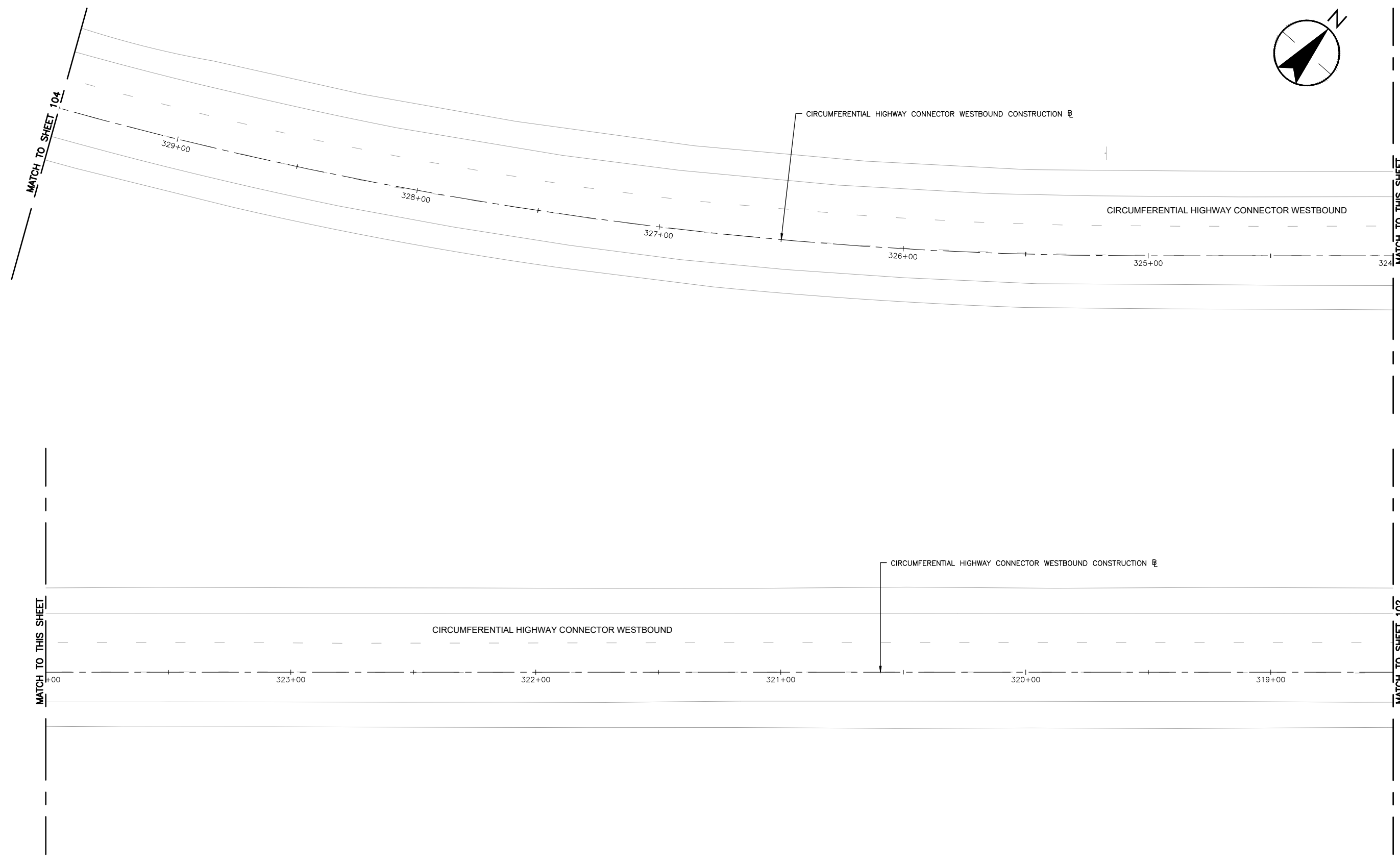


STATE OF NEW HAMPSHIRE			
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN			
<b>PAVEMENT MARKING &amp; SIGNING PLAN</b>			
FEDERAL PROJECT NO.	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
-	-	102	209

SDR PROCESSED	DATE	REVISIONS AFTER PROPOSAL
NEW DESIGN	DATE 08/21	STATION
SHEET CHECKED	DATE 08/21	STATION
AS BUILT DETAILS	DATE	STATION

NOTEBOOKS	
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STATE OF NEW HAMPSHIRE			
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<b>PAVEMENT MARKING &amp; SIGNING PLAN</b>			
FEDERAL PROJECT NO.	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
-	-	103	209

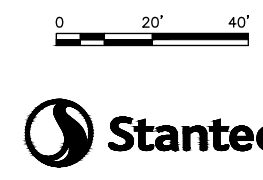
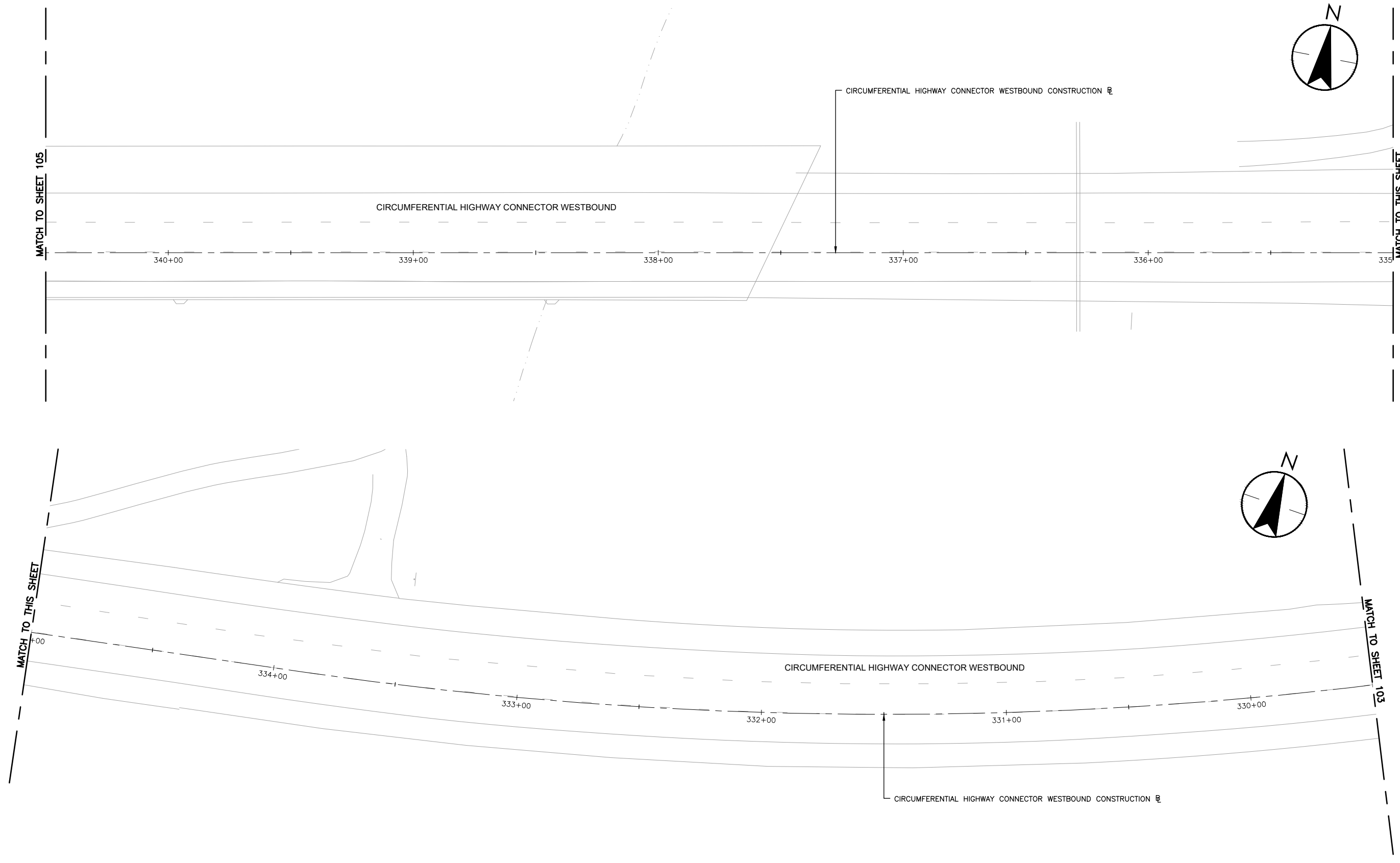
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NEW DESIGN	TJG	DATE	08/21
SHEET CHECKED	DEM	DATE	08/21
AS BUILT DETAILS		DATE	

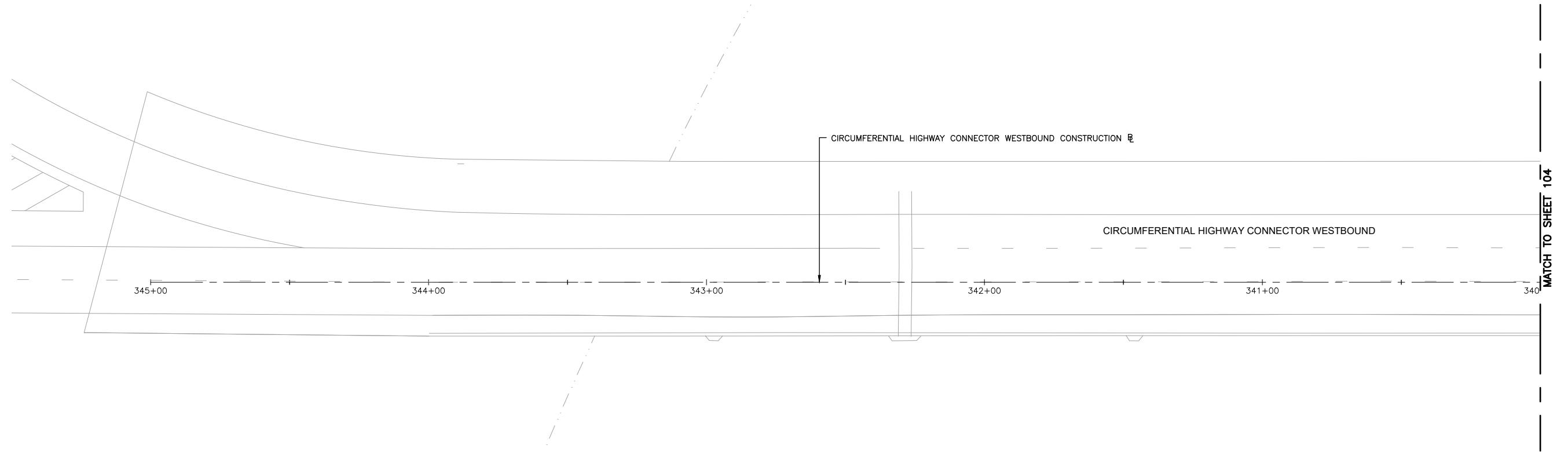
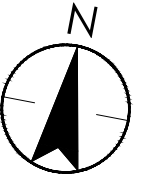
NOTEBOOKS	
BOOK	PAGE
BOOK	PAGE
BOOK	PAGE

REVISIONS AFTER PROPOSAL	
NUMBER	DATE
STATION	STATION
DESCRIPTION	



STATE OF NEW HAMPSHIRE			
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN			
<b>PAVEMENT MARKING &amp; SIGNING PLAN</b>			
FEDERAL PROJECT NO.	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
-	-	104	209



SDR PROCESSED	-	DATE	-
NEW DESIGN	TJG	DATE	08/21
SHEET CHECKED	DEM	DATE	08/21
AS BUILT DETAILS		DATE	

NOTEBOOKS			
BOOK	PAGE	BOOK	PAGE
BOOK	PAGE	BOOK	PAGE
BOOK	PAGE	BOOK	PAGE

REVISIONS AFTER PROPOSAL			
NUMBER	DATE	STATION	DESCRIPTION



STATE OF NEW HAMPSHIRE			
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN			
<b>PAVEMENT MARKING &amp; SIGNING PLAN</b>			
FEDERAL PROJECT NO.	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
-	-	105	209

MATCH TO SHEET 104

## **Appendix B**

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

Lowell&River-Steele&Dracut  
Traffic Counts

Start Time	Lowell Road From North				Dracut Road From East				River Road From South				Steele Road From West			
	Left	Through	Right	Total	Left	Through	Right	Total	Left	Thru	Right	Total	Left	Through	Right	Total
6:00 AM	44	55	1	100	0	1	61	62	1	22	0	23	2	0	1	3
6:15 AM	60	63	1	124	0	0	94	94	0	30	0	30	2	0	1	3
6:30 AM	79	81	4	164	0	0	109	109	0	41	0	41	3	0	1	4
6:45 AM	88	121	5	214	0	0	159	159	0	50	0	50	3	0	0	3
7:00 AM	92	124	3	219	0	0	164	164	0	53	0	53	1	0	1	2
7:15 AM	109	131	0	240	0	0	199	199	0	61	0	61	0	0	0	0
7:30 AM	130	103	4	237	0	0	231	231	0	82	0	82	0	0	1	1
7:45 AM	112	144	2	258	0	0	188	188	0	52	0	52	1	0	1	2
8:00 AM	101	104	6	211	0	1	174	175	0	52	0	52	1	0	0	1
8:15 AM	105	111	8	224	1	1	163	165	0	61	0	61	1	0	0	1
8:30 AM	105	80	8	193	0	1	138	139	0	51	0	51	1	0	0	1
8:45 AM	78	77	0	155	0	0	126	126	0	52	0	52	4	0	0	4
9:00 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9:15 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9:30 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9:45 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Grand Total	1103	1194	42	2339	1	4	1806	1811	1	607	0	608	19	0	6	25

Trucks	19	13	0	32	0	0	28	28	0	7	0	7	0	0	2	2
% Trucks	1.7%	1.1%	0.0%	1.4%	0.0%	0.0%	1.6%	1.5%	0.0%	1.2%	#N/A	1.2%	0.0%	#N/A	33.3%	8.0%
Buses	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
%Buses	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Total HV	19	13	0	32	0	0	28	28	0	7	0	7	0	0	2	2
Total % HV	1.7%	1.1%	0.0%	1.4%	0.0%	0.0%	1.6%	1.5%	0.0%	1.2%	#N/A	1.2%	0.0%	#N/A	33.3%	8.0%

Grand Total	Lowell Road From North				Dracut Road From East				River Road From South				Steele Road From West				Time Period	
	Left	Through	Right	Total	Left	Through	Right	Total	Left	Thru	Right	Total	Left	Through	Right	Total		
1183	271	320	11	602	0	1	423	424	1	143	0	144	10	0	3	13	6:00 AM	to 7:00 AM
1433	319	389	13	721	0	0	526	526	0	174	0	174	9	0	3	12	6:15 AM	to 7:15 AM
1682	368	457	12	837	0	0	631	631	0	205	0	205	7	0	2	9	6:30 AM	to 7:30 AM
1915	419	479	12	910	0	0	753	753	0	246	0	246	4	0	2	6	6:45 AM	to 7:45 AM
1989	443	502	9	954	0	0	782	782	0	248	0	248	2	0	3	5	7:00 AM	to 8:00 AM
1990	452	482	12	946	0	1	792	793	0	247	0	247	2	0	2	4	7:15 AM	to 8:15 AM
1941	448	462	20	930	1	2	756	759	0	247	0	247	3	0	2	5	7:30 AM	to 8:30 AM
1774	423	439	24	886	1	3	663	667	0	216	0	216	4	0	1	5	7:45 AM	to 8:45 AM
1611	389	372	22	783	1	3	601	605	0	216	0	216	7	0	0	7	8:00 AM	to 9:00 AM
1172	288	268	16	572	1	2	427	430	0	164	0	164	6	0	0	6	8:15 AM	to 9:15 AM
721	183	157	8	348	0	1	264	265	0	103	0	103	5	0	0	5	8:30 AM	to 9:30 AM
337	78	77	0	155	0	0	126	126	0	52	0	52	4	0	0	4	8:45 AM	to 9:45 AM
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9:00 AM	to 10:00 AM

7:15 AM	240	199	61	0
7:30 AM	237	231	82	1
7:45 AM	258	188	52	2
8:00 AM	211	175	52	1
Peak Hour Total	946	793	247	4
PHF	0.92	0.86	0.75	0.50

7:15 AM	240	199	61	0
7:30 AM	237	231	82	1
7:45 AM	258	188	52	2
8:00 AM	211	175	52	1
Peak Hour Total	946	793	247	4
PHF	0.92	0.86	0.75	0.50



Lowell&River-Steele&Dracut  
Traffic Counts

Start Time	Lowell Road From North				Dracut Road From East				River Road From South				Steele Road From West			
	Left	Through	Right	Total	Left	Through	Right	Total	Left	Through	Right	Total	Left	Through	Right	Total
4:00 PM	161	82	5	248	1	0	136	137	0	151	14	165	8	0	1	9
4:15 PM	201	101	5	307	0	0	132	132	2	122	0	124	1	0	1	2
4:30 PM	193	87	1	281	1	0	165	166	0	149	0	149	16	2	0	18
4:45 PM	180	83	4	267	2	0	136	138	1	137	0	138	6	0	1	7
5:00 PM	220	99	3	322	0	0	153	153	0	118	0	118	9	0	0	9
5:15 PM	232	100	5	337	1	0	147	148	0	152	1	153	4	0	1	5
5:30 PM	189	85	1	275	0	1	163	164	0	141	0	141	8	0	0	8
5:45 PM	180	62	2	244	0	0	150	150	0	128	0	128	18	0	0	18
6:00 PM	162	70	1	233	1	0	146	147	0	91	0	91	10	0	0	10
6:15 PM	169	58	1	228	0	0	106	106	0	85	0	85	19	1	1	21
6:30 PM	145	54	0	199	0	0	116	116	1	82	0	83	10	0	0	10
6:45 PM	152	60	0	212	0	0	99	99	0	60	0	60	6	0	1	7
7:00 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7:15 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7:30 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7:45 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Grand Total	2184	941	28	3153	6	1	1649	1656	4	1416	15	1435	115	3	6	124

Trucks	9	5	0	14	0	0	6	6	0	2	0	2	1	0	0	1
% Trucks	0.4%	0.5%	0.0%	0.4%	0.0%	0.0%	0.4%	0.4%	0.0%	0.1%	0.0%	0.1%	0.9%	0.0%	0.0%	0.8%
Buses	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
%Buses	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Total HV	9	5	0	14	0	0	6	6	0	2	0	2	1	0	0	1
Total % HV	0.4%	0.5%	0.0%	0.4%	0.0%	0.0%	0.4%	0.4%	0.0%	0.1%	0.0%	0.1%	0.9%	0.0%	0.0%	0.8%

Peak Hour	Lowell Road From North				Dracut Road From East				River Road From South				Steele Road From West				Time Period		
	Grand Total	Left	Through	Right	Total	Left	Through	Right	Total	Left	Through	Right	Total	Left	Through	Right	Total		
2288	735	353	15	1103	4	0	569	573	3	559	14	576	31	2	3	36	4:00 PM	to	5:00 PM
2331	794	370	13	1177	3	0	586	589	3	526	0	529	32	2	2	36	4:15 PM	to	5:15 PM
2409	825	369	13	1207	4	0	601	605	1	556	1	558	35	2	2	39	4:30 PM	to	5:30 PM
2383	821	367	13	1201	3	1	599	603	1	548	1	550	27	0	2	29	4:45 PM	to	5:45 PM
2373	821	346	11	1178	1	1	613	615	0	539	1	540	39	0	1	40	5:00 PM	to	6:00 PM
2252	763	317	9	1089	2	1	606	609	0	512	1	513	40	0	1	41	5:15 PM	to	6:15 PM
2049	700	275	5	980	1	1	565	567	0	445	0	445	55	1	1	57	5:30 PM	to	6:30 PM
1869	656	244	4	904	1	0	518	519	1	386	0	387	57	1	1	59	5:45 PM	to	6:45 PM
1707	628	242	2	872	1	0	467	468	1	318	0	319	45	1	2	48	6:00 PM	to	7:00 PM
1226	466	172	1	639	0	0	321	321	1	227	0	228	35	1	2	38	6:15 PM	to	7:15 PM
786	297	114	0	411	0	0	215	215	1	142	0	143	16	0	1	17	6:30 PM	to	7:30 PM
378	152	60	0	212	0	0	99	99	0	60	0	60	6	0	1	7	6:45 PM	to	7:45 PM
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7:00 PM	to	8:00 PM

4:30 PM	281	166	149	18
4:45 PM	267	138	138	7
5:00 PM	322	153	118	9
5:15 PM	337	148	153	5
Peak Hour Total	1207	605	558	39
PHF	0.90	0.91	0.91	0.54

4:30 PM	281	166	149	18
4:45 PM	267	138	138	7
5:00 PM	322	153	118	9
5:15 PM	337	148	153	5
Peak Hour Total	1207	605	558	39
PHF	0.90	0.91	0.91	0.54

Lowell-Rena&Site  
Traffic Counts

Start Time	Lowell Road From North				Rena Avenue From East				Lowell Road From South				Site Driveway From West			
	Left	Through	Right	Total	Left	Through	Right	Total	Left	Thru	Right	Total	Left	Through	Right	Total
6:00 AM	0	102	9	111	0	0	2	2	3	77	1	81	0	0	0	0
6:15 AM	1	114	8	123	3	0	4	7	2	127	0	129	0	0	0	0
6:30 AM	1	172	10	183	1	0	2	3	3	152	0	155	0	0	0	0
6:45 AM	0	226	17	243	5	0	9	14	3	224	0	227	0	0	0	0
7:00 AM	1	210	12	223	0	0	7	7	2	222	1	225	0	0	0	0
7:15 AM	1	236	11	248	0	0	9	9	3	265	1	269	0	0	0	0
7:30 AM	1	253	12	266	0	0	9	9	4	314	0	318	1	0	0	1
7:45 AM	3	247	15	265	0	0	6	6	3	259	1	263	2	0	1	3
8:00 AM	2	212	13	227	1	1	8	10	5	232	0	237	0	0	1	1
8:15 AM	3	214	7	224	0	0	10	10	4	217	0	221	0	0	0	0
8:30 AM	0	186	8	194	1	0	3	4	1	196	0	197	0	0	0	0
8:45 AM	0	164	6	170	0	0	6	6	3	188	1	192	2	0	1	3
9:00 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9:15 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9:30 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9:45 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Grand Total	13	2336	128	2477	11	1	75	87	36	2473	5	2514	5	0	3	8

Trucks	2	37	0	39	1	0	2	3	0	48	1	49	0	0	1	1
% Trucks	15.4%	1.6%	0.0%	1.6%	9.1%	0.0%	2.7%	3.4%	0.0%	1.9%	20.0%	1.9%	0.0%	#N/A	33.3%	12.5%
Buses	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
%Buses	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Total HV	2	37	0	39	1	0	2	3	0	48	1	49	0	0	1	1
Total % HV	15.4%	1.6%	0.0%	1.6%	9.1%	0.0%	2.7%	3.4%	0.0%	1.9%	20.0%	1.9%	0.0%	#N/A	33.3%	12.5%

Grand Total	Lowell Road From North				Rena Avenue From East				Lowell Road From South				Site Driveway From West				Time Period	
	Left	Through	Right	Total	Left	Through	Right	Total	Left	Thru	Right	Total	Left	Through	Right	Total		
1278	2	614	44	660	9	0	17	26	11	580	1	592	0	0	0	0	6:00 AM	to 7:00 AM
1539	3	722	47	772	9	0	22	31	10	725	1	736	0	0	0	0	6:15 AM	to 7:15 AM
1806	3	844	50	897	6	0	27	33	11	863	2	876	0	0	0	0	6:30 AM	to 7:30 AM
2059	3	925	52	980	5	0	34	39	12	1025	2	1039	1	0	0	1	6:45 AM	to 7:45 AM
2112	6	946	50	1002	0	0	31	31	12	1060	3	1075	3	0	1	4	7:00 AM	to 8:00 AM
2132	7	948	51	1006	1	1	32	34	15	1070	2	1087	3	0	2	5	7:15 AM	to 8:15 AM
2061	9	926	47	982	1	1	33	35	16	1022	1	1039	3	0	2	5	7:30 AM	to 8:30 AM
1862	8	859	43	910	2	1	27	30	13	904	1	918	2	0	2	4	7:45 AM	to 8:45 AM
1696	5	776	34	815	2	1	27	30	13	833	1	847	2	0	2	4	8:00 AM	to 9:00 AM
1221	3	564	21	588	1	0	19	20	8	601	1	610	2	0	1	3	8:15 AM	to 9:15 AM
766	0	350	14	364	1	0	9	10	4	384	1	389	2	0	1	3	8:30 AM	to 9:30 AM
371	0	164	6	170	0	0	6	6	3	188	1	192	2	0	1	3	8:45 AM	to 9:45 AM
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9:00 AM	to 10:00 AM

7:15 AM	248	9	269	0
7:30 AM	266	9	318	1
7:45 AM	265	6	263	3
8:00 AM	227	10	237	1
Peak Hour Total	1006	34	1087	5
PHF	0.95	0.85	0.85	0.42

7:15 AM	248	9	269	0
7:30 AM	266	9	318	1
7:45 AM	265	6	263	3
8:00 AM	227	10	237	1
Peak Hour Total	1006	34	1087	5
PHF	0.95	0.85	0.85	0.42

Lowell-Rena&Site  
Traffic Counts

Start Time	Lowell Road From North				Rena Avenue From East				Lowell Road From South				Site Driveway From West			
	Left	Through	Right	Total	Left	Through	Right	Total	Left	Through	Right	Total	Left	Through	Right	Total
4:00 PM	8	270	2	280	0	0	5	5	0	309	2	311	13	0	2	15
4:15 PM	5	276	2	283	1	0	4	5	2	253	0	255	9	1	2	12
4:30 PM	6	276	1	283	0	0	3	3	0	323	2	325	11	0	5	16
4:45 PM	8	252	3	263	0	0	5	5	1	275	0	276	15	0	5	20
5:00 PM	6	328	2	336	1	0	2	3	0	295	3	298	13	0	4	17
5:15 PM	3	326	0	329	0	0	5	5	1	309	0	310	11	0	3	14
5:30 PM	3	268	0	271	1	0	3	4	0	322	2	324	6	0	1	7
5:45 PM	12	236	0	248	1	0	0	1	1	302	0	303	3	0	3	6
6:00 PM	3	229	1	233	0	0	5	5	0	246	2	248	5	0	2	7
6:15 PM	7	224	0	231	0	0	1	1	0	222	0	222	3	0	1	4
6:30 PM	5	195	0	200	1	0	2	3	1	209	1	211	2	0	2	4
6:45 PM	3	207	0	210	1	0	4	5	0	180	1	181	2	0	0	2
7:00 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7:15 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7:30 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7:45 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Grand Total	69	3087	11	3167	6	0	39	45	6	3245	13	3264	93	1	30	124

Trucks	0	8	1	9	0	0	0	0	0	12	0	12	1	0	0	1
% Trucks	0.0%	0.3%	9.1%	0.3%	0.0%	#N/A	0.0%	0.0%	0.0%	0.4%	0.0%	0.4%	1.1%	0.0%	0.0%	0.8%
Buses	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
%Buses	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Total HV	0	8	1	9	0	0	0	0	0	12	0	12	1	0	0	1
Total % HV	0.0%	0.3%	9.1%	0.3%	0.0%	#N/A	0.0%	0.0%	0.0%	0.4%	0.0%	0.4%	1.1%	0.0%	0.0%	0.8%

Peak Hour	Lowell Road From North				Rena Avenue From East				Lowell Road From South				Site Driveway From West				Time Period	
	Left	Through	Right	Total	Left	Through	Right	Total	Left	Through	Right	Total	Left	Through	Right	Total		
Grand Total	2357	27	1074	8	1109	1	0	17	18	3	1160	4	1167	48	1	14	63	4:00 PM to 5:00 PM
2400	25	1132	8	1165	2	0	14	16	3	1146	5	1154	48	1	16	65	4:15 PM to 5:15 PM	
2503	23	1182	6	1211	1	0	15	16	2	1202	5	1209	50	0	17	67	4:30 PM to 5:30 PM	
2482	20	1174	5	1199	2	0	15	17	2	1201	5	1208	45	0	13	58	4:45 PM to 5:45 PM	
2476	24	1158	2	1184	3	0	10	13	2	1228	5	1235	33	0	11	44	5:00 PM to 6:00 PM	
2315	21	1059	1	1081	2	0	13	15	2	1179	4	1185	25	0	9	34	5:15 PM to 6:15 PM	
2115	25	957	1	983	2	0	9	11	1	1092	4	1097	17	0	7	24	5:30 PM to 6:30 PM	
1927	27	884	1	912	2	0	8	10	2	979	3	984	13	0	8	21	5:45 PM to 6:45 PM	
1767	18	855	1	874	2	0	12	14	1	857	4	862	12	0	5	17	6:00 PM to 7:00 PM	
1274	15	626	0	641	2	0	7	9	1	611	2	614	7	0	3	10	6:15 PM to 7:15 PM	
816	8	402	0	410	2	0	6	8	1	389	2	392	4	0	2	6	6:30 PM to 7:30 PM	
398	3	207	0	210	1	0	4	5	0	180	1	181	2	0	0	2	6:45 PM to 7:45 PM	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7:00 PM to 8:00 PM

4:30 PM	283				3				325			16
4:45 PM	263				5				276			20
5:00 PM	336				3				298			17
5:15 PM	329				5				310			14
Peak Hour Total	1211				16				1209			67
PHF	0.90				0.80				0.93			0.84

4:30 PM	283				3				325			16
4:45 PM	263				5				276			20
5:00 PM	336				3				298			17
5:15 PM	329				5				310			14
Peak Hour Total	1211				16				1209			67
PHF	0.90				0.80				0.93			0.84

Lowell-Sams&Walmart  
Traffic Counts

Start Time	Lowell Road From North				Walmart Driveway From East				Lowell Road From South				Sam's Club Driveway From West			
	Left	Through	Right	Total	Left	Through	Right	Total	Left	Thru	Right	Total	Left	Through	Right	Total
6:00 AM	11	105	3	119	2	0	3	5	4	73	2	79	3	0	6	9
6:15 AM	5	128	3	136	1	0	10	11	3	122	6	131	6	3	2	11
6:30 AM	9	163	5	177	1	1	11	13	12	137	3	152	10	1	6	17
6:45 AM	17	222	13	252	9	1	9	19	9	227	7	243	14	0	8	22
7:00 AM	16	218	10	244	3	1	15	19	14	190	7	211	15	0	6	21
7:15 AM	19	235	18	272	4	3	13	20	12	257	5	274	30	1	12	43
7:30 AM	23	240	18	281	3	0	19	22	20	293	6	319	23	1	17	41
7:45 AM	19	250	10	279	4	1	21	26	13	251	9	273	28	1	14	43
8:00 AM	24	203	17	244	4	1	18	23	17	222	7	246	20	1	12	33
8:15 AM	30	207	17	254	5	1	12	18	13	197	11	221	21	0	10	31
8:30 AM	30	164	31	225	8	0	15	23	11	176	11	198	24	7	17	48
8:45 AM	30	144	23	197	7	2	30	39	10	191	12	213	21	3	13	37
9:00 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9:15 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9:30 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9:45 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Grand Total	233	2279	168	2680	51	11	176	238	138	2336	86	2560	215	18	123	356

Trucks	5	32	4	41	0	0	8	8	1	34	2	37	3	1	4	8
% Trucks	2.1%	1.4%	2.4%	1.5%	0.0%	0.0%	4.5%	3.4%	0.7%	1.5%	2.3%	1.4%	1.4%	5.6%	3.3%	2.2%
Buses	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
%Buses	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Total HV	5	32	4	41	0	0	8	8	1	34	2	37	3	1	4	8
Total % HV	2.1%	1.4%	2.4%	1.5%	0.0%	0.0%	4.5%	3.4%	0.7%	1.5%	2.3%	1.4%	1.4%	5.6%	3.3%	2.2%

Grand Total	Lowell Road From North				Walmart Driveway From East				Lowell Road From South				Sam's Club Driveway From West				Time Period	
	Left	Through	Right	Total	Left	Through	Right	Total	Left	Thru	Right	Total	Left	Through	Right	Total		
1396	42	618	24	684	13	2	33	48	28	559	18	605	33	4	22	59	6:00 AM	to 7:00 AM
1679	47	731	31	809	14	3	45	62	38	676	23	737	45	4	22	71	6:15 AM	to 7:15 AM
1999	61	838	46	945	17	6	48	71	47	811	22	880	69	2	32	103	6:30 AM	to 7:30 AM
2303	75	915	59	1049	19	5	56	80	55	967	25	1047	82	2	43	127	6:45 AM	to 7:45 AM
2388	77	943	56	1076	14	5	68	87	59	991	27	1077	96	3	49	148	7:00 AM	to 8:00 AM
2439	85	928	63	1076	15	5	71	91	62	1023	27	1112	101	4	55	160	7:15 AM	to 8:15 AM
2354	96	900	62	1058	16	3	70	89	63	963	33	1059	92	3	53	148	7:30 AM	to 8:30 AM
2185	103	824	75	1002	21	3	66	90	54	846	38	938	93	9	53	155	7:45 AM	to 8:45 AM
2050	114	718	88	920	24	4	75	103	51	786	41	878	86	11	52	149	8:00 AM	to 9:00 AM
1504	90	515	71	676	20	3	57	80	34	564	34	632	66	10	40	116	8:15 AM	to 9:15 AM
980	60	308	54	422	15	2	45	62	21	367	23	411	45	10	30	85	8:30 AM	to 9:30 AM
486	30	144	23	197	7	2	30	39	10	191	12	213	21	3	13	37	8:45 AM	to 9:45 AM
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9:00 AM	to 10:00 AM

7:15 AM	272				20				274				43					
7:30 AM	281				22				319				41					
7:45 AM	279				26				273				43					
8:00 AM	244				23				246				33					
Peak Hour Total	1076				91				1112				160					
PHF	0.96				0.88				0.87				0.93					

7:15 AM	272				20				274				43					
7:30 AM	281				22				319				41					
7:45 AM	279				26				273				43					
8:00 AM	244				23				246				33					
Peak Hour Total	1076				91				1112				160					
PHF	0.96				0.88				0.87				0.93					

Lowell-Sams&Walmart  
Traffic Counts

Start Time	Lowell Road From North				Walmart Driveway From East				Lowell Road From South				Sam's Club Driveway From West			
	Left	Through	Right	Total	Left	Through	Right	Total	Left	Through	Right	Total	Left	Through	Right	Total
4:00 PM	58	236	45	339	11	5	64	80	17	300	25	342	49	4	25	78
4:15 PM	56	238	50	344	12	6	68	86	17	202	24	243	57	3	32	92
4:30 PM	63	237	59	359	18	6	67	91	32	316	11	359	71	2	32	105
4:45 PM	78	224	54	356	18	9	74	101	25	248	19	292	69	3	27	99
5:00 PM	72	280	40	392	27	2	36	65	11	282	24	317	48	2	34	84
5:15 PM	95	282	43	420	24	3	65	92	26	264	19	309	58	6	19	83
5:30 PM	66	233	46	345	15	6	60	81	17	286	29	332	69	2	22	93
5:45 PM	61	213	35	309	20	4	61	85	24	245	23	292	50	8	16	74
6:00 PM	52	188	38	278	20	3	64	87	11	235	24	270	38	5	22	65
6:15 PM	47	181	34	262	24	4	69	97	17	176	16	209	52	4	24	80
6:30 PM	56	159	38	253	16	1	46	63	12	197	16	225	35	4	19	58
6:45 PM	47	166	26	239	19	3	52	74	13	155	9	177	43	1	19	63
7:00 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7:15 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7:30 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7:45 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Grand Total	751	2637	508	3896	224	52	726	1002	222	2906	239	3367	639	44	291	974

Trucks	1	14	0	15	0	0	2	2	1	10	0	11	2	0	0	2
% Trucks	0.1%	0.5%	0.0%	0.4%	0.0%	0.0%	0.3%	0.2%	0.5%	0.3%	0.0%	0.3%	0.3%	0.0%	0.0%	0.2%
Buses	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
%Buses	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Total HV	1	14	0	15	0	0	2	2	1	10	0	11	2	0	0	2
Total % HV	0.1%	0.5%	0.0%	0.4%	0.0%	0.0%	0.3%	0.2%	0.5%	0.3%	0.0%	0.3%	0.3%	0.0%	0.0%	0.2%

Peak Hour	Lowell Road From North				Walmart Driveway From East				Lowell Road From South				Sam's Club Driveway From West				Time Period		
	Left	Through	Right	Total	Left	Through	Right	Total	Left	Through	Right	Total	Left	Through	Right	Total			
Grand Total	3366	255	935	208	1398	59	26	273	358	91	1066	79	1236	246	12	116	374	4:00 PM	to 5:00 PM
	3385	269	979	203	1451	75	23	245	343	85	1048	78	1211	245	10	125	380	4:15 PM	to 5:15 PM
	3524	308	1023	196	1527	87	20	242	349	94	1110	73	1277	246	13	112	371	4:30 PM	to 5:30 PM
	3461	311	1019	183	1513	84	20	235	339	79	1080	91	1250	244	13	102	359	4:45 PM	to 5:45 PM
	3373	294	1008	164	1466	86	15	222	323	78	1077	95	1250	225	18	91	334	5:00 PM	to 6:00 PM
	3215	274	916	162	1352	79	16	250	345	78	1030	95	1203	215	21	79	315	5:15 PM	to 6:15 PM
	2959	226	815	153	1194	79	17	254	350	69	942	92	1103	209	19	84	312	5:30 PM	to 6:30 PM
	2707	216	741	145	1102	80	12	240	332	64	853	79	996	175	21	81	277	5:45 PM	to 6:45 PM
	2500	202	694	136	1032	79	11	231	321	53	763	65	881	168	14	84	266	6:00 PM	to 7:00 PM
	1800	150	506	98	754	59	8	167	234	42	528	41	611	130	9	62	201	6:15 PM	to 7:15 PM
	1152	103	325	64	492	35	4	98	137	25	352	25	402	78	5	38	121	6:30 PM	to 7:30 PM
	553	47	166	26	239	19	3	52	74	13	155	9	177	43	1	19	63	6:45 PM	to 7:45 PM
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7:00 PM	to 8:00 PM

4:30 PM	359	91	359	105
4:45 PM	356	101	292	99
5:00 PM	392	65	317	84
5:15 PM	420	92	309	83
Peak Hour Total	1527	349	1277	371
PHF	0.91	0.86	0.89	0.88

4:30 PM	359	91	359	105
4:45 PM	356	101	292	99
5:00 PM	392	65	317	84
5:15 PM	420	92	309	83
Peak Hour Total	1527	349	1277	371
PHF	0.91	0.86	0.89	0.88

Lowell-Circumferential  
Traffic Counts

Start Time	Lowell Road From North								Lowell Road From South				Circumferential Highway From West			
	Left	Through	Right	Total	Left	Through	Right	Total	Left	Thru	Right	Total	Left	Through	Right	Total
6:00 AM	0	51	255	306	0	0	0	0	55	25	0	80	93	0	72	165
6:15 AM	0	58	274	332	0	0	0	0	89	31	0	120	121	0	94	215
6:30 AM	0	50	289	339	0	0	0	0	103	50	0	153	140	0	139	279
6:45 AM	0	83	298	381	0	0	0	0	153	93	0	246	207	0	185	392
7:00 AM	0	83	338	421	0	0	0	0	145	63	0	208	174	0	178	352
7:15 AM	0	69	350	419	0	0	0	0	217	86	0	303	204	0	213	417
7:30 AM	0	86	395	481	0	0	0	0	220	84	0	304	239	0	219	458
7:45 AM	0	87	369	456	0	0	0	0	240	82	0	322	248	0	189	437
8:00 AM	0	78	337	415	0	0	0	0	184	69	0	253	210	0	208	418
8:15 AM	0	75	270	345	0	0	0	0	173	70	0	243	209	0	172	381
8:30 AM	0	84	293	377	0	0	0	0	146	69	0	215	154	0	162	316
8:45 AM	0	75	292	367	0	0	0	0	149	74	0	223	180	0	140	320
9:00 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9:15 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9:30 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9:45 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Grand Total	0	879	3760	4639	0	0	0	0	1874	796	0	2670	2179	0	1971	4150

Trucks	0	15	121	136	0	0	0	0	26	17	0	43	41	0	42	83
% Trucks	#N/A	1.7%	3.2%	2.9%	#N/A	#N/A	#N/A	#N/A	1.4%	2.1%	#N/A	1.6%	1.9%	#N/A	2.1%	2.0%
Buses	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
%Buses	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Total HV	0	15	121	136	0	0	0	0	26	17	0	43	41	0	42	83
Total % HV	#N/A	1.7%	3.2%	2.9%	#N/A	#N/A	#N/A	#N/A	1.4%	2.1%	#N/A	1.6%	1.9%	#N/A	2.1%	2.0%

Grand Total	Lowell Road From North				0				Lowell Road From South				Circumferential Highway From West				Time Period	
	Left	Through	Right	Total	Left	Through	Right	Total	Left	Thru	Right	Total	Left	Through	Right	Total		
3008	0	242	1116	1358	0	0	0	0	400	199	0	599	561	0	490	1051	6:00 AM	to 7:00 AM
3438	0	274	1199	1473	0	0	0	0	490	237	0	727	642	0	596	1238	6:15 AM	to 7:15 AM
3910	0	285	1275	1560	0	0	0	0	618	292	0	910	725	0	715	1440	6:30 AM	to 7:30 AM
4382	0	321	1381	1702	0	0	0	0	735	326	0	1061	824	0	795	1619	6:45 AM	to 7:45 AM
4578	0	325	1452	1777	0	0	0	0	822	315	0	1137	865	0	799	1664	7:00 AM	to 8:00 AM
4683	0	320	1451	1771	0	0	0	0	861	321	0	1182	901	0	829	1730	7:15 AM	to 8:15 AM
4513	0	326	1371	1697	0	0	0	0	817	305	0	1122	906	0	788	1694	7:30 AM	to 8:30 AM
4178	0	324	1269	1593	0	0	0	0	743	290	0	1033	821	0	731	1552	7:45 AM	to 8:45 AM
3873	0	312	1192	1504	0	0	0	0	652	282	0	934	753	0	682	1435	8:00 AM	to 9:00 AM
2787	0	234	855	1089	0	0	0	0	468	213	0	681	543	0	474	1017	8:15 AM	to 9:15 AM
1818	0	159	585	744	0	0	0	0	295	143	0	438	334	0	302	636	8:30 AM	to 9:30 AM
910	0	75	292	367	0	0	0	0	149	74	0	223	180	0	140	320	8:45 AM	to 9:45 AM
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9:00 AM	to 10:00 AM

7:15 AM	419	0	303	417
7:30 AM	481	0	304	458
7:45 AM	456	0	322	437
8:00 AM	415	0	253	418
Peak Hour Total	1771	0	1182	1730
PHF	0.92	#DIV/0!	0.92	0.94

7:15 AM	419	0	303	417
7:30 AM	481	0	304	458
7:45 AM	456	0	322	437
8:00 AM	415	0	253	418
Peak Hour Total	1771	0	1182	1730
PHF	0.92	#DIV/0!	0.92	0.94

Lowell-Circumferential  
Traffic Counts

Start Time	Lowell Road From North				River Road From South				Circumferential Highway From West							
	Left	Through	Right	Total	Left	Through	Right	Total	Left	Through	Right	Total				
4:00 PM	0	93	275	368	0	0	0	0	243	146	0	389	352	0	258	610
4:15 PM	0	117	250	367	0	0	0	0	227	131	0	358	338	0	266	604
4:30 PM	0	91	273	364	0	0	0	0	253	178	0	431	363	0	260	623
4:45 PM	0	101	274	375	0	0	0	0	247	147	0	394	358	0	280	638
5:00 PM	0	109	338	447	0	0	0	0	267	132	0	399	360	0	281	641
5:15 PM	0	123	290	413	0	0	0	0	251	143	0	394	332	0	334	666
5:30 PM	0	97	253	350	0	0	0	0	266	161	0	427	360	0	254	614
5:45 PM	0	110	239	349	0	0	0	0	212	137	0	349	357	0	203	560
6:00 PM	0	90	270	360	0	0	0	0	239	124	0	363	284	0	214	498
6:15 PM	0	100	186	286	0	0	0	0	205	94	0	299	244	0	180	424
6:30 PM	0	90	199	289	0	0	0	0	187	78	0	265	240	0	167	407
6:45 PM	0	105	174	279	0	0	0	0	149	85	0	234	242	0	158	400
7:00 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7:15 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7:30 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7:45 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Grand Total	0	1226	3021	4247	0	0	0	0	2746	1556	0	4302	3830	0	2855	6685

Trucks	0	1	25	26	0	0	0	0	11	2	0	13	27	0	20	47
% Trucks	#N/A	0.1%	0.8%	0.6%	#N/A	#N/A	#N/A	#N/A	0.4%	0.1%	#N/A	0.3%	0.7%	#N/A	0.7%	0.7%
Buses	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
%Buses	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Total HV	0	1	25	26	0	0	0	0	11	2	0	13	27	0	20	47
Total % HV	#N/A	0.1%	0.8%	0.6%	#N/A	#N/A	#N/A	#N/A	0.4%	0.1%	#N/A	0.3%	0.7%	#N/A	0.7%	0.7%

Peak Hour	Lowell Road From North				River Road From South				Circumferential Highway From West				Time Period				
	Left	Through	Right	Total	Left	Through	Right	Total	Left	Through	Right	Total					
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5521	0	402	1072	1474	0	0	0	0	970	602	0	1572	1411	0	1064	2475	4:00 PM to 5:00 PM
5641	0	418	1135	1553	0	0	0	0	994	588	0	1582	1419	0	1087	2506	4:15 PM to 5:15 PM
5785	0	424	1175	1599	0	0	0	0	1018	600	0	1618	1413	0	1155	2568	4:30 PM to 5:30 PM
5758	0	430	1155	1585	0	0	0	0	1031	583	0	1614	1410	0	1149	2559	4:45 PM to 5:45 PM
5609	0	439	1120	1559	0	0	0	0	996	573	0	1569	1409	0	1072	2481	5:00 PM to 6:00 PM
5343	0	420	1052	1472	0	0	0	0	968	565	0	1533	1333	0	1005	2338	5:15 PM to 6:15 PM
4879	0	397	948	1345	0	0	0	0	922	516	0	1438	1245	0	851	2096	5:30 PM to 6:30 PM
4449	0	390	894	1284	0	0	0	0	843	433	0	1276	1125	0	764	1889	5:45 PM to 6:45 PM
4104	0	385	829	1214	0	0	0	0	780	381	0	1161	1010	0	719	1729	6:00 PM to 7:00 PM
2883	0	295	559	854	0	0	0	0	541	257	0	798	726	0	505	1231	6:15 PM to 7:15 PM
1874	0	195	373	568	0	0	0	0	336	163	0	499	482	0	325	807	6:30 PM to 7:30 PM
913	0	105	174	279	0	0	0	0	149	85	0	234	242	0	158	400	6:45 PM to 7:45 PM
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7:00 PM to 8:00 PM

4:30 PM	364	0	431	623
4:45 PM	375	0	394	638
5:00 PM	447	0	399	641
5:15 PM	413	0	394	666
Peak Hour Total	1599	0	1618	2568
PHF	0.89	#DIV/0!	0.94	0.96

4:30 PM	364	0	431	623
4:45 PM	375	0	394	638
5:00 PM	447	0	399	641
5:15 PM	413	0	394	666
Peak Hour Total	1599	0	1618	2568
PHF	0.89	#DIV/0!	0.94	0.96

Lowell-Wason&Flagstone  
Traffic Counts

Start Time	Lowell Road From North				Watson Road From East				Lowell Road From South				Flagstone Drive From West			
	Left	Through	Right	Total	Left	Through	Right	Total	Left	Thru	Right	Total	Left	Through	Right	Total
6:00 AM	0	226	2	228	51	9	5	65	37	65	11	113	0	0	27	27
6:15 AM	0	226	0	226	78	11	2	91	44	83	11	138	2	2	25	29
6:30 AM	2	208	2	212	100	7	2	109	50	102	27	179	3	0	38	41
6:45 AM	4	270	2	276	93	11	4	108	75	204	37	316	4	2	29	35
7:00 AM	3	228	2	233	154	11	8	173	53	150	37	240	6	1	32	39
7:15 AM	4	239	0	243	149	12	3	164	50	212	38	300	3	2	39	44
7:30 AM	5	282	3	290	138	8	2	148	58	199	59	316	3	1	63	67
7:45 AM	4	255	2	261	147	11	10	168	61	205	52	318	2	6	54	62
8:00 AM	2	217	0	219	153	6	14	173	62	169	40	271	8	0	36	44
8:15 AM	4	203	1	208	110	9	8	127	73	174	33	280	2	2	32	36
8:30 AM	5	244	2	251	102	8	11	121	56	133	42	231	7	3	38	48
8:45 AM	5	211	2	218	110	13	7	130	60	153	47	260	2	1	37	40
9:00 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9:15 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9:30 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9:45 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Grand Total	38	2809	18	2865	1385	116	76	1577	679	1849	434	2962	42	20	450	512

Trucks	1	53	1	55	12	0	3	15	3	43	9	55	0	0	11	11
% Trucks	2.6%	1.9%	5.6%	1.9%	0.9%	0.0%	3.9%	1.0%	0.4%	2.3%	2.1%	1.9%	0.0%	0.0%	2.4%	2.1%
Buses	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
%Buses	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Total HV	1	53	1	55	12	0	3	15	3	43	9	55	0	0	11	11
Total % HV	2.6%	1.9%	5.6%	1.9%	0.9%	0.0%	3.9%	1.0%	0.4%	2.3%	2.1%	1.9%	0.0%	0.0%	2.4%	2.1%

Grand Total	Lowell Road From North				Watson Road From East				Lowell Road From South				Flagstone Drive From West				Time Period	
	Left	Through	Right	Total	Left	Through	Right	Total	Left	Thru	Right	Total	Left	Through	Right	Total		
2193	6	930	6	942	322	38	13	373	206	454	86	746	9	4	119	132	6:00 AM	to 7:00 AM
2445	9	932	6	947	425	40	16	481	222	539	112	873	15	5	124	144	6:15 AM	to 7:15 AM
2712	13	945	6	964	496	41	17	554	228	668	139	1035	16	5	138	159	6:30 AM	to 7:30 AM
2992	16	1019	7	1042	534	42	17	593	236	765	171	1172	16	6	163	185	6:45 AM	to 7:45 AM
3066	16	1004	7	1027	588	42	23	653	222	766	186	1174	14	10	188	212	7:00 AM	to 8:00 AM
3088	15	993	5	1013	587	37	29	653	231	785	189	1205	16	9	192	217	7:15 AM	to 8:15 AM
2988	15	957	6	978	548	34	34	616	254	747	184	1185	15	9	185	209	7:30 AM	to 8:30 AM
2818	15	919	5	939	512	34	43	589	252	681	167	1100	19	11	160	190	7:45 AM	to 8:45 AM
2657	16	875	5	896	475	36	40	551	251	629	162	1042	19	6	143	168	8:00 AM	to 9:00 AM
1950	14	658	5	677	322	30	26	378	189	460	122	771	11	6	107	124	8:15 AM	to 9:15 AM
1299	10	455	4	469	212	21	18	251	116	286	89	491	9	4	75	88	8:30 AM	to 9:30 AM
648	5	211	2	218	110	13	7	130	60	153	47	260	2	1	37	40	8:45 AM	to 9:45 AM
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9:00 AM	to 10:00 AM

7:15 AM	243	164	300	44
7:30 AM	290	148	316	67
7:45 AM	261	168	318	62
8:00 AM	219	173	271	44
Peak Hour Total	1013	653	1205	217
PHF	0.87	0.94	0.95	0.81

7:15 AM	243	164	300	44
7:30 AM	290	148	316	67
7:45 AM	261	168	318	62
8:00 AM	219	173	271	44
Peak Hour Total	1013	653	1205	217
PHF	0.87	0.94	0.95	0.81



Lowell-Wason&Flagstone  
Traffic Counts

Start Time	Lowell Road From North				Watson Road From East				Lowell Road From South				Flagstone Drive From West			
	Left	Through	Right	Total	Left	Through	Right	Total	Left	Through	Right	Total	Left	Through	Right	Total
4:00 PM	14	185	0	199	104	4	3	111	21	241	217	479	6	12	90	108
4:15 PM	9	201	3	213	103	2	9	114	9	253	222	484	4	5	52	61
4:30 PM	9	210	1	220	92	2	4	98	12	276	251	539	5	17	75	97
4:45 PM	16	170	0	186	107	8	9	124	20	236	242	498	4	8	76	88
5:00 PM	28	219	0	247	97	3	7	107	25	237	237	499	7	23	148	178
5:15 PM	17	203	1	221	117	2	7	126	19	236	242	497	4	13	71	88
5:30 PM	15	206	3	224	96	3	13	112	17	254	255	526	2	14	63	79
5:45 PM	25	180	1	206	100	3	18	121	20	239	237	496	3	6	46	55
6:00 PM	16	217	0	233	97	2	12	111	11	251	168	430	2	10	62	74
6:15 PM	12	152	2	166	87	1	10	98	9	194	132	335	4	7	34	45
6:30 PM	6	174	0	180	92	2	10	104	5	208	123	336	4	0	27	31
6:45 PM	13	160	0	173	90	2	15	107	7	189	106	302	1	1	19	21
7:00 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7:15 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7:30 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7:45 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Grand Total	180	2277	11	2468	1182	34	117	1333	175	2814	2432	5421	46	116	763	925

Trucks	0	12	0	12	5	0	1	6	2	28	1	31	0	0	5	5
% Trucks	0.0%	0.5%	0.0%	0.5%	0.4%	0.0%	0.9%	0.5%	1.1%	1.0%	0.0%	0.6%	0.0%	0.0%	0.7%	0.5%
Buses	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
%Buses	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Total HV	0	12	0	12	5	0	1	6	2	28	1	31	0	0	5	5
Total % HV	0.0%	0.5%	0.0%	0.5%	0.4%	0.0%	0.9%	0.5%	1.1%	1.0%	0.0%	0.6%	0.0%	0.0%	0.7%	0.5%

Peak Hour	Lowell Road From North				Watson Road From East				Lowell Road From South				Flagstone Drive From West				Time Period		
	Left	Through	Right	Total	Left	Through	Right	Total	Left	Through	Right	Total	Left	Through	Right	Total			
Grand Total	3619	48	766	4	818	406	16	25	447	62	1006	932	2000	19	42	293	354	4:00 PM	to 5:00 PM
	3753	62	800	4	866	399	15	29	443	66	1002	952	2020	20	53	351	424	4:15 PM	to 5:15 PM
	3813	70	802	2	874	413	15	27	455	76	985	972	2033	20	61	370	451	4:30 PM	to 5:30 PM
	3800	76	798	4	878	417	16	36	469	81	963	976	2020	17	58	358	433	4:45 PM	to 5:45 PM
	3782	85	808	5	898	410	11	45	466	81	966	971	2018	16	56	328	400	5:00 PM	to 6:00 PM
	3599	73	806	5	884	410	10	50	470	67	980	902	1949	11	43	242	296	5:15 PM	to 6:15 PM
	3311	68	755	6	829	380	9	53	442	57	938	792	1787	11	37	205	253	5:30 PM	to 6:30 PM
	3021	59	723	3	785	376	8	50	434	45	892	660	1597	13	23	169	205	5:45 PM	to 6:45 PM
	2746	47	703	2	752	366	7	47	420	32	842	529	1403	11	18	142	171	6:00 PM	to 7:00 PM
	1898	31	486	2	519	269	5	35	309	21	591	361	973	9	8	80	97	6:15 PM	to 7:15 PM
	1254	19	334	0	353	182	4	25	211	12	397	229	638	5	1	46	52	6:30 PM	to 7:30 PM
	603	13	160	0	173	90	2	15	107	7	189	106	302	1	1	19	21	6:45 PM	to 7:45 PM
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7:00 PM	to 8:00 PM

4:30 PM	220	98	539	97
4:45 PM	186	124	498	88
5:00 PM	247	107	499	178
5:15 PM	221	126	497	88
Peak Hour Total	874	455	2033	451
PHF	0.88	0.90	0.94	0.63

4:30 PM	220	98	539	97
4:45 PM	186	124	498	88
5:00 PM	247	107	499	178
5:15 PM	221	126	497	88
Peak Hour Total	874	455	2033	451
PHF	0.88	0.90	0.94	0.63

Lowell-Hampshire&Oblate  
Traffic Counts

Start Time	Lowell Road From North				Oblate Drive From East				Lowell Road From South				Hampshire Drive From West			
	Left	Through	Right	Total	Left	Through	Right	Total	Left	Thru	Right	Total	Left	Through	Right	Total
6:00 AM	0	238	11	249	0	0	0	0	6	51	0	57	0	0	2	2
6:15 AM	0	236	5	241	1	1	0	2	14	67	0	81	1	0	3	4
6:30 AM	0	243	4	247	0	0	0	0	14	78	0	92	1	0	2	3
6:45 AM	0	265	10	275	0	0	0	0	25	143	0	168	4	0	3	7
7:00 AM	0	253	3	256	3	0	0	3	21	144	0	165	3	0	7	10
7:15 AM	0	239	7	246	0	0	2	2	23	163	1	187	1	0	1	2
7:30 AM	0	314	18	332	1	1	0	2	17	200	0	217	2	0	2	4
7:45 AM	0	264	21	285	1	0	0	1	38	189	0	227	1	0	7	8
8:00 AM	2	231	11	244	0	1	2	3	35	154	1	190	4	0	1	5
8:15 AM	3	222	7	232	3	0	3	6	35	142	3	180	1	0	4	5
8:30 AM	4	262	5	271	3	0	1	4	21	123	1	145	3	0	3	6
8:45 AM	1	233	7	241	3	0	0	3	21	132	2	155	0	0	1	1
9:00 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9:15 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9:30 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9:45 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Grand Total	10	3000	109	3119	15	3	8	26	270	1586	8	1864	21	0	36	57

Trucks	0	90	3	93	0	0	0	0	8	50	0	58	1	0	4	5
% Trucks	0.0%	3.0%	2.8%	3.0%	0.0%	0.0%	0.0%	0.0%	3.0%	3.2%	0.0%	3.1%	4.8%	#N/A	11.1%	8.8%
Buses	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
%Buses	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Total HV	0	90	3	93	0	0	0	0	8	50	0	58	1	0	4	5
Total % HV	0.0%	3.0%	2.8%	3.0%	0.0%	0.0%	0.0%	0.0%	3.0%	3.2%	0.0%	3.1%	4.8%	#N/A	11.1%	8.8%

Grand Total	Lowell Road From North				Oblate Drive From East				Lowell Road From South				Hampshire Drive From West				Time Period	
	Left	Through	Right	Total	Left	Through	Right	Total	Left	Thru	Right	Total	Left	Through	Right	Total		
1428	0	982	30	1012	1	1	0	2	59	339	0	398	6	0	10	16	6:00 AM	to 7:00 AM
1554	0	997	22	1019	4	1	0	5	74	432	0	506	9	0	15	24	6:15 AM	to 7:15 AM
1663	0	1000	24	1024	3	0	2	5	83	528	1	612	9	0	13	22	6:30 AM	to 7:30 AM
1876	0	1071	38	1109	4	1	2	7	86	650	1	737	10	0	13	23	6:45 AM	to 7:45 AM
1947	0	1070	49	1119	5	1	2	8	99	696	1	796	7	0	17	24	7:00 AM	to 8:00 AM
1955	2	1048	57	1107	2	2	4	8	113	706	2	821	8	0	11	19	7:15 AM	to 8:15 AM
1941	5	1031	57	1093	5	2	5	12	125	685	4	814	8	0	14	22	7:30 AM	to 8:30 AM
1812	9	979	44	1032	7	1	6	14	129	608	5	742	9	0	15	24	7:45 AM	to 8:45 AM
1691	10	948	30	988	9	1	6	16	112	551	7	670	8	0	9	17	8:00 AM	to 9:00 AM
1249	8	717	19	744	9	0	4	13	77	397	6	480	4	0	8	12	8:15 AM	to 9:15 AM
826	5	495	12	512	6	0	1	7	42	255	3	300	3	0	4	7	8:30 AM	to 9:30 AM
400	1	233	7	241	3	0	0	3	21	132	2	155	0	0	1	1	8:45 AM	to 9:45 AM
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9:00 AM	to 10:00 AM

7:15 AM	246				2				187				2					
7:30 AM	332				2				217				4					
7:45 AM	285				1				227				8					
8:00 AM	244				3				190				5					
Peak Hour Total	1107				8				821				19					
PHF	0.83				0.67				0.90				0.59					

7:15 AM	246				2				187				2					
7:30 AM	332				2				217				4					
7:45 AM	285				1				227				8					
8:00 AM	244				3				190				5					
Peak Hour Total	1107				8				821				19					
PHF	0.83				0.67				0.90				0.59					

Lowell-Hampshire&Oblate  
Traffic Counts

Start Time	Lowell Road From North				Oblate Drive From East				Lowell Road From South				Hampshire Drive From West			
	Left	Through	Right	Total	Left	Through	Right	Total	Left	Through	Right	Total	Left	Through	Right	Total
4:00 PM	1	209	4	214	1	0	0	1	8	255	1	264	8	1	18	27
4:15 PM	2	181	2	185	1	0	0	1	4	254	2	260	8	0	18	26
4:30 PM	2	180	1	183	3	0	0	3	6	266	2	274	1	0	23	24
4:45 PM	2	193	2	197	4	0	1	5	2	236	2	240	7	2	17	26
5:00 PM	0	223	3	226	0	0	1	1	3	265	5	273	10	0	44	54
5:15 PM	1	179	1	181	3	1	2	6	5	248	3	256	7	0	17	24
5:30 PM	1	200	2	203	0	0	2	2	5	216	6	227	8	3	15	26
5:45 PM	0	197	1	198	5	0	0	5	5	269	0	274	3	0	12	15
6:00 PM	0	189	1	190	3	1	0	4	3	228	2	233	1	0	16	17
6:15 PM	0	157	1	158	0	0	0	0	3	247	3	253	4	1	11	16
6:30 PM	0	177	1	178	2	0	0	2	0	214	3	217	1	0	4	5
6:45 PM	0	154	2	156	1	0	0	1	2	208	3	213	3	0	5	8
7:00 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7:15 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7:30 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7:45 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Grand Total	9	2239	21	2269	23	2	6	31	46	2906	32	2984	61	7	200	268

Trucks	0	12	0	12	0	0	0	0	2	32	0	34	0	0	2	2
% Trucks	0.0%	0.5%	0.0%	0.5%	0.0%	0.0%	0.0%	0.0%	4.3%	1.1%	0.0%	1.1%	0.0%	0.0%	1.0%	0.7%
Buses	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
%Buses	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Total HV	0	12	0	12	0	0	0	0	2	32	0	34	0	0	2	2
Total % HV	0.0%	0.5%	0.0%	0.5%	0.0%	0.0%	0.0%	0.0%	4.3%	1.1%	0.0%	1.1%	0.0%	0.0%	1.0%	0.7%

Peak Hour	Lowell Road From North				Oblate Drive From East				Lowell Road From South				Hampshire Drive From West				Time Period	
	Left	Through	Right	Total	Left	Through	Right	Total	Left	Through	Right	Total	Left	Through	Right	Total		
Grand Total	7	763	9	779	9	0	1	10	20	1011	7	1038	24	3	76	103	4:00 PM	to 5:00 PM
1930	6	777	8	791	8	0	2	10	15	1021	11	1047	26	2	102	130	4:15 PM	to 5:15 PM
1978	5	775	7	787	10	1	4	15	16	1015	12	1043	25	2	101	128	4:30 PM	to 5:30 PM
1973	4	795	8	807	7	1	6	14	15	965	16	996	32	5	93	130	4:45 PM	to 5:45 PM
1947	2	799	7	808	8	1	5	14	18	998	14	1030	28	3	88	119	5:00 PM	to 6:00 PM
1971	2	765	5	772	11	2	4	17	18	961	11	990	19	3	60	82	5:15 PM	to 6:15 PM
1861	1	743	5	749	8	1	2	11	16	960	11	987	16	4	54	74	5:30 PM	to 6:30 PM
1821	0	720	4	724	10	1	0	11	11	958	8	977	9	1	43	53	5:45 PM	to 6:45 PM
1765	0	677	5	682	6	1	0	7	8	897	11	916	9	1	36	46	6:00 PM	to 7:00 PM
1651	0	488	4	492	3	0	0	3	5	669	9	683	8	1	20	29	6:15 PM	to 7:15 PM
1207	0	331	3	334	3	0	0	3	2	422	6	430	4	0	9	13	6:30 PM	to 7:30 PM
780	0	154	2	156	1	0	0	1	2	208	3	213	3	0	5	8	6:45 PM	to 7:45 PM
378	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7:00 PM	to 8:00 PM

4:15 PM	185			1				260				26
4:30 PM	183			3				274				24
4:45 PM	197			5				240				26
5:00 PM	226			1				273				54
Peak Hour Total	791			10				1047				130
PHF	0.88			0.50				0.96				0.60

4:30 PM	183			3				274				24
4:45 PM	197			5				240				26
5:00 PM	226			1				273				54
5:15 PM	181			6				256				24
Peak Hour Total	787			15				1043				128
PHF	0.87			0.63				0.95				0.59

Lowell-Executive  
Traffic Counts

Start Time	Lowell Road From North				Executive Drive From East				Lowell Road From South				Executive Drive From West			
	Left	Through	Right	Total	Left	Through	Right	Total	Left	Thru	Right	Total	Left	Through	Right	Total
6:00 AM	1	228	36	265	0	0	1	1	12	39	2	53	3	0	3	6
6:15 AM	1	229	45	275	0	0	1	1	16	41	0	57	6	0	0	6
6:30 AM	7	226	37	270	6	0	1	7	20	61	1	82	6	0	1	7
6:45 AM	4	256	55	315	3	0	3	6	30	93	1	124	3	1	3	7
7:00 AM	4	227	40	271	6	1	3	10	28	122	3	153	2	0	6	8
7:15 AM	37	236	37	310	17	2	10	29	35	80	30	145	14	2	1	17
7:30 AM	44	262	39	345	71	18	51	140	32	87	23	142	9	0	4	13
7:45 AM	19	237	63	319	27	6	14	47	53	110	5	168	6	0	5	11
8:00 AM	7	218	58	283	26	4	26	56	39	115	2	156	6	0	0	6
8:15 AM	2	206	57	265	3	0	4	7	53	92	1	146	4	0	4	8
8:30 AM	0	237	56	293	6	0	2	8	22	96	0	118	5	0	2	7
8:45 AM	1	214	30	245	1	0	0	1	20	105	0	125	3	0	7	10
9:00 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9:15 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9:30 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9:45 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Grand Total	127	2776	553	3456	166	31	116	313	360	1041	68	1469	67	3	36	106

Trucks	1	46	12	59	2	0	3	5	8	38	2	48	8	0	5	13
% Trucks	0.8%	1.7%	2.2%	1.7%	1.2%	0.0%	2.6%	1.6%	2.2%	3.7%	2.9%	3.3%	11.9%	0.0%	13.9%	12.3%
Buses	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
%Buses	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Total HV	1	46	12	59	2	0	3	5	8	38	2	48	8	0	5	13
Total % HV	0.8%	1.7%	2.2%	1.7%	1.2%	0.0%	2.6%	1.6%	2.2%	3.7%	2.9%	3.3%	11.9%	0.0%	13.9%	12.3%

Grand Total	Lowell Road From North				Executive Drive From East				Lowell Road From South				Executive Drive From West				Time Period	
	Left	Through	Right	Total	Left	Through	Right	Total	Left	Thru	Right	Total	Left	Through	Right	Total		
1482	13	939	173	1125	9	0	6	15	78	234	4	316	18	1	7	26	6:00 AM	to 7:00 AM
1599	16	938	177	1131	15	1	8	24	94	317	5	416	17	1	10	28	6:15 AM	to 7:15 AM
1761	52	945	169	1166	32	3	17	52	113	356	35	504	25	3	11	39	6:30 AM	to 7:30 AM
2035	89	981	171	1241	97	21	67	185	125	382	57	564	28	3	14	45	6:45 AM	to 7:45 AM
2128	104	962	179	1245	121	27	78	226	148	399	61	608	31	2	16	49	7:00 AM	to 8:00 AM
2187	107	953	197	1257	141	30	101	272	159	392	60	611	35	2	10	47	7:15 AM	to 8:15 AM
2112	72	923	217	1212	127	28	95	250	177	404	31	612	25	0	13	38	7:30 AM	to 8:30 AM
1898	28	898	234	1160	62	10	46	118	167	413	8	588	21	0	11	32	7:45 AM	to 8:45 AM
1734	10	875	201	1086	36	4	32	72	134	408	3	545	18	0	13	31	8:00 AM	to 9:00 AM
1233	3	657	143	803	10	0	6	16	95	293	1	389	12	0	13	25	8:15 AM	to 9:15 AM
807	1	451	86	538	7	0	2	9	42	201	0	243	8	0	9	17	8:30 AM	to 9:30 AM
381	1	214	30	245	1	0	0	1	20	105	0	125	3	0	7	10	8:45 AM	to 9:45 AM
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9:00 AM	to 10:00 AM

7:15 AM	310	29	145	17
7:30 AM	345	140	142	13
7:45 AM	319	47	168	11
8:00 AM	283	56	156	6
Peak Hour Total	1257	272	611	47
PHF	0.91	0.49	0.91	0.69

7:15 AM	310	29	145	17
7:30 AM	345	140	142	13
7:45 AM	319	47	168	11
8:00 AM	283	56	156	6
Peak Hour Total	1257	272	611	47
PHF	0.91	0.49	0.91	0.69

Lowell-Executive  
Traffic Counts

Start Time	Lowell Road From North				Executive Drive From East				Lowell Road From South				Executive Drive From West			
	Left	Through	Right	Total	Left	Through	Right	Total	Left	Through	Right	Total	Left	Through	Right	Total
4:00 PM	4	148	8	160	35	1	18	54	7	268	1	276	34	0	16	50
4:15 PM	3	162	8	173	6	0	9	15	9	250	1	260	24	1	5	30
4:30 PM	2	162	7	171	4	0	5	9	12	226	1	239	52	0	8	60
4:45 PM	5	151	9	165	7	2	10	19	3	238	5	246	40	1	16	57
5:00 PM	4	167	14	185	8	0	6	14	16	236	1	253	75	2	39	116
5:15 PM	5	145	9	159	4	0	1	5	19	227	0	246	49	0	14	63
5:30 PM	4	170	15	189	11	1	10	22	12	229	2	243	45	2	12	59
5:45 PM	0	143	11	154	5	1	1	7	16	245	5	266	16	1	14	31
6:00 PM	2	167	13	182	1	0	2	3	4	198	1	203	36	1	17	54
6:15 PM	2	124	7	133	4	0	10	14	12	246	0	258	21	1	7	29
6:30 PM	1	156	17	174	0	0	0	0	6	199	0	205	15	1	15	31
6:45 PM	1	142	7	150	1	0	0	1	7	198	1	206	8	0	6	14
7:00 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7:15 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7:30 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7:45 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Grand Total	33	1837	125	1995	86	5	72	163	123	2760	18	2901	415	10	169	594

Trucks	2	10	5	17	0	0	2	2	5	27	0	32	2	0	3	5
% Trucks	6.1%	0.5%	4.0%	0.9%	0.0%	0.0%	2.8%	1.2%	4.1%	1.0%	0.0%	1.1%	0.5%	0.0%	1.8%	0.8%
Buses	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
%Buses	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Total HV	2	10	5	17	0	0	2	2	5	27	0	32	2	0	3	5
Total % HV	6.1%	0.5%	4.0%	0.9%	0.0%	0.0%	2.8%	1.2%	4.1%	1.0%	0.0%	1.1%	0.5%	0.0%	1.8%	0.8%

Peak Hour	Lowell Road From North				Executive Drive From East				Lowell Road From South				Executive Drive From West				Time Period		
	Left	Through	Right	Total	Left	Through	Right	Total	Left	Through	Right	Total	Left	Through	Right	Total			
Grand Total	1984	14	623	32	669	52	3	42	97	31	982	8	1021	150	2	45	197	4:00 PM	to 5:00 PM
2012	14	642	38	694	25	2	30	57	40	950	8	998	191	4	68	263	4:15 PM	to 5:15 PM	
2007	16	625	39	680	23	2	22	47	50	927	7	984	216	3	77	296	4:30 PM	to 5:30 PM	
2041	18	633	47	698	30	3	27	60	50	930	8	988	209	5	81	295	4:45 PM	to 5:45 PM	
2012	13	625	49	687	28	2	18	48	63	937	8	1008	185	5	79	269	5:00 PM	to 6:00 PM	
1886	11	625	48	684	21	2	14	37	51	899	8	958	146	4	57	207	5:15 PM	to 6:15 PM	
1847	8	604	46	658	21	2	23	46	44	918	8	970	118	5	50	173	5:30 PM	to 6:30 PM	
1744	5	590	48	643	10	1	13	24	38	888	6	932	88	4	53	145	5:45 PM	to 6:45 PM	
1657	6	589	44	639	6	0	12	18	29	841	2	872	80	3	45	128	6:00 PM	to 7:00 PM	
1215	4	422	31	457	5	0	10	15	25	643	1	669	44	2	28	74	6:15 PM	to 7:15 PM	
781	2	298	24	324	1	0	0	1	13	397	1	411	23	1	21	45	6:30 PM	to 7:30 PM	
371	1	142	7	150	1	0	0	1	7	198	1	206	8	0	6	14	6:45 PM	to 7:45 PM	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7:00 PM	to 8:00 PM	

4:45 PM	165	19	246	57
5:00 PM	185	14	253	116
5:15 PM	159	5	246	63
5:30 PM	189	22	243	59
Peak Hour Total	698	60	988	295
PHF	0.92	0.68	0.98	0.64

4:30 PM	171	9	239	60
4:45 PM	165	19	246	57
5:00 PM	185	14	253	116
5:15 PM	159	5	246	63
Peak Hour Total	680	47	984	296
PHF	0.92	0.62	0.97	0.64

Lowell-FoxHollow&Nottingham  
Traffic Counts

Start Time	Lowell Road From North				Fox Hollow Drive From East				Lowell Road From South				Nottingham Square Driveway From West			
	Left	Through	Right	Total	Left	Through	Right	Total	Left	Thru	Right	Total	Left	Through	Right	Total
6:00 AM	1	255	0	256	0	1	5	6	1	39	0	40	1	1	7	9
6:15 AM	1	282	0	283	1	0	3	4	1	43	0	44	3	0	7	10
6:30 AM	1	259	0	260	0	0	4	4	2	64	0	66	6	0	10	16
6:45 AM	1	309	0	310	0	0	5	5	3	86	1	90	5	0	21	26
7:00 AM	2	272	0	274	2	0	3	5	1	121	0	122	6	0	10	16
7:15 AM	2	302	1	305	2	0	2	4	1	97	0	98	3	0	16	19
7:30 AM	3	321	1	325	1	0	2	3	1	138	0	139	2	0	18	20
7:45 AM	4	295	1	300	1	0	2	3	1	130	0	131	4	0	12	16
8:00 AM	7	293	0	300	2	0	4	6	1	135	1	137	2	0	2	4
8:15 AM	3	278	0	281	3	0	1	4	3	97	0	100	7	0	5	12
8:30 AM	9	287	0	296	1	0	4	5	2	110	0	112	1	0	8	9
8:45 AM	6	249	1	256	1	0	6	7	1	107	1	109	3	0	6	9
9:00 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9:15 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9:30 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9:45 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Grand Total	40	3402	4	3446	14	1	41	56	18	1167	3	1188	43	1	122	166

Trucks	0	61	0	61	0	0	0	0	0	50	0	50	2	0	2	4
% Trucks	0.0%	1.8%	0.0%	1.8%	0.0%	0.0%	0.0%	0.0%	0.0%	4.3%	0.0%	4.2%	4.7%	0.0%	1.6%	2.4%
Buses	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
%Buses	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Total HV	0	61	0	61	0	0	0	0	0	50	0	50	2	0	2	4
Total % HV	0.0%	1.8%	0.0%	1.8%	0.0%	0.0%	0.0%	0.0%	0.0%	4.3%	0.0%	4.2%	4.7%	0.0%	1.6%	2.4%

Peak Hour	Lowell Road From North				Fox Hollow Drive From East				Lowell Road From South				Nottingham Square Driveway From West				Time Period	
	Left	Through	Right	Total	Left	Through	Right	Total	Left	Thru	Right	Total	Left	Through	Right	Total		
Grand Total	1429	4	1105	0	1109	1	1	17	19	7	232	1	240	15	1	45	61	6:00 AM to 7:00 AM
1535	5	1122	0	1127	3	0	15	18	7	314	1	322	20	0	48	68	6:15 AM to 7:15 AM	
1620	6	1142	1	1149	4	0	14	18	7	368	1	376	20	0	57	77	6:30 AM to 7:30 AM	
1761	8	1204	2	1214	5	0	12	17	6	442	1	449	16	0	65	81	6:45 AM to 7:45 AM	
1780	11	1190	3	1204	6	0	9	15	4	486	0	490	15	0	56	71	7:00 AM to 8:00 AM	
1810	16	1211	3	1230	6	0	10	16	4	500	1	505	11	0	48	59	7:15 AM to 8:15 AM	
1781	17	1187	2	1206	7	0	9	16	6	500	1	507	15	0	37	52	7:30 AM to 8:30 AM	
1716	23	1153	1	1177	7	0	11	18	7	472	1	480	14	0	27	41	7:45 AM to 8:45 AM	
1647	25	1107	1	1133	7	0	15	22	7	449	2	458	13	0	21	34	8:00 AM to 9:00 AM	
1200	18	814	1	833	5	0	11	16	6	314	1	321	11	0	19	30	8:15 AM to 9:15 AM	
803	15	536	1	552	2	0	10	12	3	217	1	221	4	0	14	18	8:30 AM to 9:30 AM	
381	6	249	1	256	1	0	6	7	1	107	1	109	3	0	6	9	8:45 AM to 9:45 AM	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9:00 AM to 10:00 AM	

7:15 AM	305	4	98	19
7:30 AM	325	3	139	20
7:45 AM	300	3	131	16
8:00 AM	300	6	137	4
Peak Hour Total	1230	16	505	59
PHF	0.95	0.67	0.91	0.74

7:15 AM	305	4	98	19
7:30 AM	325	3	139	20
7:45 AM	300	3	131	16
8:00 AM	300	6	137	4
Peak Hour Total	1230	16	505	59
PHF	0.95	0.67	0.91	0.74

Lowell-FoxHollow&Nottingham  
Traffic Counts

Start Time	Lowell Road From North				Fox Hollow Drive From East				Lowell Road From South				Nottingham Square Driveway From West			
	Left	Through	Right	Total	Left	Through	Right	Total	Left	Through	Right	Total	Left	Through	Right	Total
4:00 PM	6	157	3	166	3	0	12	15	5	303	1	309	2	0	2	4
4:15 PM	10	167	3	180	3	0	11	14	11	245	1	257	0	0	2	2
4:30 PM	11	154	3	168	9	0	8	17	4	284	2	290	2	0	5	7
4:45 PM	9	148	3	160	9	0	16	25	6	269	7	282	1	1	7	9
5:00 PM	16	166	3	185	8	0	12	20	8	278	4	290	3	1	10	14
5:15 PM	20	165	2	187	5	0	12	17	9	273	2	284	3	0	3	6
5:30 PM	2	167	6	175	12	1	14	27	6	280	2	288	7	0	2	9
5:45 PM	11	149	3	163	3	1	8	12	8	266	1	275	6	1	8	15
6:00 PM	10	153	0	163	12	0	14	26	7	244	1	252	0	0	9	9
6:15 PM	6	140	2	148	3	2	12	17	11	259	2	272	2	0	3	5
6:30 PM	12	156	2	170	11	0	15	26	5	196	2	203	3	1	1	5
6:45 PM	5	134	3	142	7	2	8	17	6	212	1	219	0	2	2	4
7:00 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7:15 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7:30 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7:45 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Grand Total	118	1856	33	2007	85	6	142	233	86	3109	26	3221	29	6	54	89

Trucks	0	17	0	17	0	0	0	0	0	31	0	31	0	0	1	1
% Trucks	0.0%	0.9%	0.0%	0.8%	0.0%	0.0%	0.0%	0.0%	0.0%	1.0%	0.0%	1.0%	0.0%	0.0%	1.9%	1.1%
Buses	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
%Buses	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Total HV	0	17	0	17	0	0	0	0	0	31	0	31	0	0	1	1
Total % HV	0.0%	0.9%	0.0%	0.8%	0.0%	0.0%	0.0%	0.0%	0.0%	1.0%	0.0%	1.0%	0.0%	0.0%	1.9%	1.1%

Peak Hour	Lowell Road From North				Fox Hollow Drive From East				Lowell Road From South				Nottingham Square Driveway From West				Time Period
	Left	Through	Right	Total	Left	Through	Right	Total	Left	Through	Right	Total	Left	Through	Right	Total	
Grand Total																	
1905	36	626	12	674	24	0	47	71	26	1101	11	1138	5	1	16	22	4:00 PM to 5:00 PM
1920	46	635	12	693	29	0	47	76	29	1076	14	1119	6	2	24	32	4:15 PM to 5:15 PM
1961	56	633	11	700	31	0	48	79	27	1104	15	1146	9	2	25	36	4:30 PM to 5:30 PM
1978	47	646	14	707	34	1	54	89	29	1100	15	1144	14	2	22	38	4:45 PM to 5:45 PM
1967	49	647	14	710	28	2	46	76	31	1097	9	1137	19	2	23	44	5:00 PM to 6:00 PM
1908	43	634	11	688	32	2	48	82	30	1063	6	1099	16	1	22	39	5:15 PM to 6:15 PM
1856	29	609	11	649	30	4	48	82	32	1049	6	1087	15	1	22	38	5:30 PM to 6:30 PM
1761	39	598	7	644	29	3	49	81	31	965	6	1002	11	2	21	34	5:45 PM to 6:45 PM
1678	33	583	7	623	33	4	49	86	29	911	6	946	5	3	15	23	6:00 PM to 7:00 PM
1228	23	430	7	460	21	4	35	60	22	667	5	694	5	3	6	14	6:15 PM to 7:15 PM
786	17	290	5	312	18	2	23	43	11	408	3	422	3	3	3	9	6:30 PM to 7:30 PM
382	5	134	3	142	7	2	8	17	6	212	1	219	0	2	2	4	6:45 PM to 7:45 PM
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7:00 PM to 8:00 PM

4:45 PM	160	25	282	9
5:00 PM	185	20	290	14
5:15 PM	187	17	284	6
5:30 PM	175	27	288	9
Peak Hour Total	707	89	1144	38
PHF	0.95	0.82	0.99	0.68

4:30 PM	168	17	290	7
4:45 PM	160	25	282	9
5:00 PM	185	20	290	14
5:15 PM	187	17	284	6
Peak Hour Total	700	79	1146	36
PHF	0.94	0.79	0.99	0.64

Lowell-Pelham  
Traffic Counts

Start Time	Lowell Road From North				Pelham Road From East				Lowell Road From South							
	Left	Through	Right	Total	Left	Through	Right	Total	Left	Thru	Right	Total	Left	Through	Right	Total
6:00 AM	4	234	0	238	27	0	5	32	0	42	4	46	0	0	0	0
6:15 AM	4	260	0	264	22	0	9	31	0	44	7	51	0	0	0	0
6:30 AM	3	241	0	244	25	0	16	41	0	68	5	73	0	0	0	0
6:45 AM	9	271	0	280	36	0	35	71	0	95	5	100	0	0	0	0
7:00 AM	8	235	0	243	39	0	39	78	0	124	6	130	0	0	0	0
7:15 AM	12	254	0	266	59	0	16	75	0	93	12	105	0	0	0	0
7:30 AM	14	255	0	269	67	0	17	84	0	114	27	141	0	0	0	0
7:45 AM	15	242	0	257	49	0	25	74	0	119	17	136	0	0	0	0
8:00 AM	21	257	0	278	50	0	13	63	0	110	26	136	0	0	0	0
8:15 AM	17	244	0	261	40	0	43	83	0	92	18	110	0	0	0	0
8:30 AM	29	239	0	268	54	0	51	105	0	102	15	117	0	0	0	0
8:45 AM	12	221	0	233	38	0	23	61	0	112	6	118	0	0	0	0
9:00 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9:15 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9:30 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9:45 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Grand Total	148	2953	0	3101	506	0	292	798	0	1115	148	1263	0	0	0	0

Trucks	7	66	0	73	3	0	16	19	0	52	5	57	0	0	0	0
% Trucks	4.7%	2.2%	#N/A	2.4%	0.6%	#N/A	5.5%	2.4%	#N/A	4.7%	3.4%	4.5%	#N/A	#N/A	#N/A	#N/A
Buses	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
%Buses	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Total HV	7	66	0	73	3	0	16	19	0	52	5	57	0	0	0	0
Total % HV	4.7%	2.2%	#N/A	2.4%	0.6%	#N/A	5.5%	2.4%	#N/A	4.7%	3.4%	4.5%	#N/A	#N/A	#N/A	#N/A

Grand Total	Lowell Road From North				Pelham Road From East				Lowell Road From South				0				Time Period	
	Left	Through	Right	Total	Left	Through	Right	Total	Left	Thru	Right	Total	Left	Through	Right	Total		
1471	20	1006	0	1026	110	0	65	175	0	249	21	270	0	0	0	0	6:00 AM	to 7:00 AM
1606	24	1007	0	1031	122	0	99	221	0	331	23	354	0	0	0	0	6:15 AM	to 7:15 AM
1706	32	1001	0	1033	159	0	106	265	0	380	28	408	0	0	0	0	6:30 AM	to 7:30 AM
1842	43	1015	0	1058	201	0	107	308	0	426	50	476	0	0	0	0	6:45 AM	to 7:45 AM
1858	49	986	0	1035	214	0	97	311	0	450	62	512	0	0	0	0	7:00 AM	to 8:00 AM
1884	62	1008	0	1070	225	0	71	296	0	436	82	518	0	0	0	0	7:15 AM	to 8:15 AM
1892	67	998	0	1065	206	0	98	304	0	435	88	523	0	0	0	0	7:30 AM	to 8:30 AM
1888	82	982	0	1064	193	0	132	325	0	423	76	499	0	0	0	0	7:45 AM	to 8:45 AM
1833	79	961	0	1040	182	0	130	312	0	416	65	481	0	0	0	0	8:00 AM	to 9:00 AM
1356	58	704	0	762	132	0	117	249	0	306	39	345	0	0	0	0	8:15 AM	to 9:15 AM
902	41	460	0	501	92	0	74	166	0	214	21	235	0	0	0	0	8:30 AM	to 9:30 AM
412	12	221	0	233	38	0	23	61	0	112	6	118	0	0	0	0	8:45 AM	to 9:45 AM
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9:00 AM	to 10:00 AM

7:30 AM	269	84	141	0
7:45 AM	257	74	136	0
8:00 AM	278	63	136	0
8:15 AM	261	83	110	0
Peak Hour Total	1065	304	523	0
PHF	0.96	0.90	0.93	#DIV/0!

7:15 AM	266	75	105	0
7:30 AM	269	84	141	0
7:45 AM	257	74	136	0
8:00 AM	278	63	136	0
Peak Hour Total	1070	296	518	0
PHF	0.96	0.88	0.92	#DIV/0!



Lowell-Pelham  
Traffic Counts

Start Time	Lowell Road From North				Pelham Road From East				Lowell Road From South							
	Left	Through	Right	Total	Left	Through	Right	Total	Left	Through	Right	Total	Left	Through	Right	Total
4:00 PM	18	138	0	156	24	0	36	60	0	296	22	318	0	0	0	0
4:15 PM	25	161	0	186	18	0	34	52	0	245	18	263	0	0	0	0
4:30 PM	21	162	0	183	16	0	34	50	0	266	21	287	0	0	0	0
4:45 PM	26	140	0	166	22	0	41	63	0	263	30	293	0	0	0	0
5:00 PM	35	170	0	205	15	0	28	43	0	265	29	294	0	0	0	0
5:15 PM	24	151	0	175	29	0	34	63	0	253	25	278	0	0	0	0
5:30 PM	19	164	0	183	12	0	40	52	0	292	25	317	0	0	0	0
5:45 PM	19	143	0	162	16	0	34	50	0	256	20	276	0	0	0	0
6:00 PM	20	135	0	155	30	0	24	54	0	236	21	257	0	0	0	0
6:15 PM	14	128	0	142	22	0	21	43	0	253	27	280	0	0	0	0
6:30 PM	15	146	0	161	24	0	19	43	0	197	21	218	0	0	0	0
6:45 PM	26	129	0	155	16	0	12	28	0	199	20	219	0	0	0	0
7:00 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7:15 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7:30 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7:45 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Grand Total	262	1767	0	2029	244	0	357	601	0	3021	279	3300	0	0	0	0

Trucks	1	16	0	17	1	0	1	2	0	30	1	31	0	0	0	0
% Trucks	0.4%	0.9%	#N/A	0.8%	0.4%	#N/A	0.3%	0.3%	#N/A	1.0%	0.4%	0.9%	#N/A	#N/A	#N/A	#N/A
Buses	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
%Buses	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Total HV	1	16	0	17	1	0	1	2	0	30	1	31	0	0	0	0
Total % HV	0.4%	0.9%	#N/A	0.8%	0.4%	#N/A	0.3%	0.3%	#N/A	1.0%	0.4%	0.9%	#N/A	#N/A	#N/A	#N/A

Peak Hour	Lowell Road From North				Pelham Road From East				Lowell Road From South				0				Time Period	
	Left	Through	Right	Total	Left	Through	Right	Total	Left	Through	Right	Total	Left	Through	Right	Total		
Grand Total	2077	90	601	0	691	80	0	145	225	0	1070	91	1161	0	0	0	0	4:00 PM to 5:00 PM
	2085	107	633	0	740	71	0	137	208	0	1039	98	1137	0	0	0	0	4:15 PM to 5:15 PM
	2100	106	623	0	729	82	0	137	219	0	1047	105	1152	0	0	0	0	4:30 PM to 5:30 PM
	2132	104	625	0	729	78	0	143	221	0	1073	109	1182	0	0	0	0	4:45 PM to 5:45 PM
	2098	97	628	0	725	72	0	136	208	0	1066	99	1165	0	0	0	0	5:00 PM to 6:00 PM
	2022	82	593	0	675	87	0	132	219	0	1037	91	1128	0	0	0	0	5:15 PM to 6:15 PM
	1971	72	570	0	642	80	0	119	199	0	1037	93	1130	0	0	0	0	5:30 PM to 6:30 PM
	1841	68	552	0	620	92	0	98	190	0	942	89	1031	0	0	0	0	5:45 PM to 6:45 PM
	1755	75	538	0	613	92	0	76	168	0	885	89	974	0	0	0	0	6:00 PM to 7:00 PM
	1289	55	403	0	458	62	0	52	114	0	649	68	717	0	0	0	0	6:15 PM to 7:15 PM
	824	41	275	0	316	40	0	31	71	0	396	41	437	0	0	0	0	6:30 PM to 7:30 PM
	402	26	129	0	155	16	0	12	28	0	199	20	219	0	0	0	0	6:45 PM to 7:45 PM
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7:00 PM to 8:00 PM

4:45 PM	166	63	293	0
5:00 PM	205	43	294	0
5:15 PM	175	63	278	0
5:30 PM	183	52	317	0
Peak Hour Total	729	221	1182	0
PHF	0.89	0.88	0.93	#DIV/0!

4:30 PM	183	50	287	0
4:45 PM	166	63	293	0
5:00 PM	205	43	294	0
5:15 PM	175	63	278	0
Peak Hour Total	729	219	1152	0
PHF	0.89	0.87	0.98	#DIV/0!

Lowell-County  
Traffic Counts

Start Time	Lowell Road From North				County Road From East				Lowell Road From South							
	Left	Through	Right	Total	Left	Through	Right	Total	Left	Thru	Right	Total	Left	Through	Right	Total
6:00 AM	0	181	0	181	48	0	3	51	0	40	10	50	0	0	0	0
6:15 AM	1	231	0	232	42	0	0	42	0	48	5	53	0	0	0	0
6:30 AM	0	220	0	220	26	0	0	26	0	61	19	80	0	0	0	0
6:45 AM	0	241	0	241	37	0	1	38	0	113	16	129	0	0	0	0
7:00 AM	0	208	0	208	30	0	0	30	0	130	26	156	0	0	0	0
7:15 AM	1	236	0	237	37	0	1	38	0	98	27	125	0	0	0	0
7:30 AM	0	234	0	234	38	0	1	39	0	100	27	127	0	0	0	0
7:45 AM	2	233	0	235	33	0	0	33	0	118	21	139	0	0	0	0
8:00 AM	0	246	0	246	36	0	0	36	0	113	14	127	0	0	0	0
8:15 AM	0	239	0	239	31	0	3	34	0	125	24	149	0	0	0	0
8:30 AM	0	241	0	241	24	0	0	24	0	136	23	159	0	0	0	0
8:45 AM	1	208	0	209	33	0	1	34	0	103	27	130	0	0	0	0
9:00 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9:15 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9:30 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9:45 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Grand Total	5	2718	0	2723	415	0	10	425	0	1185	239	1424	0	0	0	0

Trucks	0	92	0	92	2	0	0	2	0	67	6	73	0	0	0	0
% Trucks	0.0%	3.4%	#N/A	3.4%	0.5%	#N/A	0.0%	0.5%	#N/A	5.7%	2.5%	5.1%	#N/A	#N/A	#N/A	#N/A
Buses	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
%Buses	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Total HV	0	92	0	92	2	0	0	2	0	67	6	73	0	0	0	0
Total % HV	0.0%	3.4%	#N/A	3.4%	0.5%	#N/A	0.0%	0.5%	#N/A	5.7%	2.5%	5.1%	#N/A	#N/A	#N/A	#N/A

Grand Total	Lowell Road From North				County Road From East				Lowell Road From South				0				Time Period	
	Left	Through	Right	Total	Left	Through	Right	Total	Left	Thru	Right	Total	Left	Through	Right	Total		
1343	1	873	0	874	153	0	4	157	0	262	50	312	0	0	0	0	6:00 AM	to 7:00 AM
1455	1	900	0	901	135	0	1	136	0	352	66	418	0	0	0	0	6:15 AM	to 7:15 AM
1528	1	905	0	906	130	0	2	132	0	402	88	490	0	0	0	0	6:30 AM	to 7:30 AM
1602	1	919	0	920	142	0	3	145	0	441	96	537	0	0	0	0	6:45 AM	to 7:45 AM
1601	3	911	0	914	138	0	2	140	0	446	101	547	0	0	0	0	7:00 AM	to 8:00 AM
1616	3	949	0	952	144	0	2	146	0	429	89	518	0	0	0	0	7:15 AM	to 8:15 AM
1638	2	952	0	954	138	0	4	142	0	456	86	542	0	0	0	0	7:30 AM	to 8:30 AM
1662	2	959	0	961	124	0	3	127	0	492	82	574	0	0	0	0	7:45 AM	to 8:45 AM
1628	1	934	0	935	124	0	4	128	0	477	88	565	0	0	0	0	8:00 AM	to 9:00 AM
1219	1	688	0	689	88	0	4	92	0	364	74	438	0	0	0	0	8:15 AM	to 9:15 AM
797	1	449	0	450	57	0	1	58	0	239	50	289	0	0	0	0	8:30 AM	to 9:30 AM
373	1	208	0	209	33	0	1	34	0	103	27	130	0	0	0	0	8:45 AM	to 9:45 AM
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9:00 AM	to 10:00 AM

7:45 AM	235	33	139	0
8:00 AM	246	36	127	0
8:15 AM	239	34	149	0
8:30 AM	241	24	159	0
Peak Hour Total	961	127	574	0
PHF	0.98	0.88	0.90	#DIV/0!

7:15 AM	237	38	125	0
7:30 AM	234	39	127	0
7:45 AM	235	33	139	0
8:00 AM	246	36	127	0
Peak Hour Total	952	146	518	0
PHF	0.97	0.94	0.93	#DIV/0!

Lowell-County  
Traffic Counts

Start Time	Lowell Road From North				County Road From East				Lowell Road From South							
	Left	Through	Right	Total	Left	Through	Right	Total	Left	Through	Right	Total	Left	Through	Right	Total
4:00 PM	2	132	0	134	14	0	1	15	0	234	87	321	0	0	0	0
4:15 PM	1	172	0	173	14	0	0	14	0	225	50	275	0	0	0	0
4:30 PM	1	177	0	178	12	0	1	13	0	242	58	300	0	0	0	0
4:45 PM	0	157	0	157	11	0	4	15	0	236	67	303	0	0	0	0
5:00 PM	5	190	0	195	12	0	1	13	0	228	60	288	0	0	0	0
5:15 PM	2	171	0	173	12	0	0	12	0	237	61	298	0	0	0	0
5:30 PM	1	171	0	172	13	0	1	14	0	266	60	326	0	0	0	0
5:45 PM	3	163	0	166	14	0	1	15	0	238	53	291	0	0	0	0
6:00 PM	0	146	0	146	17	0	2	19	0	202	65	267	0	0	0	0
6:15 PM	2	130	0	132	20	0	2	22	0	207	64	271	0	0	0	0
6:30 PM	3	155	0	158	17	0	3	20	0	184	55	239	0	0	0	0
6:45 PM	2	142	0	144	19	0	3	22	0	168	44	212	0	0	0	0
7:00 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7:15 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7:30 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7:45 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Grand Total	22	1906	0	1928	175	0	19	194	0	2667	724	3391	0	0	0	0

Trucks	0	18	0	18	2	0	0	2	0	33	2	35	0	0	0	0
% Trucks	0.0%	0.9%	#N/A	0.9%	1.1%	#N/A	0.0%	1.0%	#N/A	1.2%	0.3%	1.0%	#N/A	#N/A	#N/A	#N/A
Buses	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
%Buses	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Total HV	0	18	0	18	2	0	0	2	0	33	2	35	0	0	0	0
Total % HV	0.0%	0.9%	#N/A	0.9%	1.1%	#N/A	0.0%	1.0%	#N/A	1.2%	0.3%	1.0%	#N/A	#N/A	#N/A	#N/A

Peak Hour	Lowell Road From North				County Road From East				Lowell Road From South				0				Time Period	
	Left	Through	Right	Total	Left	Through	Right	Total	Left	Through	Right	Total	Left	Through	Right	Total		
Grand Total	4	638	0	642	51	0	6	57	0	937	262	1199	0	0	0	0	4:00 PM to 5:00 PM	
1898	4	638	0	642	51	0	6	57	0	937	262	1199	0	0	0	0	4:00 PM to 5:00 PM	
1924	7	696	0	703	49	0	6	55	0	931	235	1166	0	0	0	0	4:15 PM to 5:15 PM	
1945	8	695	0	703	47	0	6	53	0	943	246	1189	0	0	0	0	4:30 PM to 5:30 PM	
1966	8	689	0	697	48	0	6	54	0	967	248	1215	0	0	0	0	4:45 PM to 5:45 PM	
1963	11	695	0	706	51	0	3	54	0	969	234	1203	0	0	0	0	5:00 PM to 6:00 PM	
1899	6	651	0	657	56	0	4	60	0	943	239	1182	0	0	0	0	5:15 PM to 6:15 PM	
1841	6	610	0	616	64	0	6	70	0	913	242	1155	0	0	0	0	5:30 PM to 6:30 PM	
1746	8	594	0	602	68	0	8	76	0	831	237	1068	0	0	0	0	5:45 PM to 6:45 PM	
1652	7	573	0	580	73	0	10	83	0	761	228	989	0	0	0	0	6:00 PM to 7:00 PM	
1220	7	427	0	434	56	0	8	64	0	559	163	722	0	0	0	0	6:15 PM to 7:15 PM	
795	5	297	0	302	36	0	6	42	0	352	99	451	0	0	0	0	6:30 PM to 7:30 PM	
378	2	142	0	144	19	0	3	22	0	168	44	212	0	0	0	0	6:45 PM to 7:45 PM	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7:00 PM to 8:00 PM	

4:45 PM	157	15	303	0
5:00 PM	195	13	288	0
5:15 PM	173	12	298	0
5:30 PM	172	14	326	0
Peak Hour Total	697	54	1215	0
PHF	0.89	0.90	0.93	#DIV/0!

4:30 PM	178	13	300	0
4:45 PM	157	15	303	0
5:00 PM	195	13	288	0
5:15 PM	173	12	298	0
Peak Hour Total	703	53	1189	0
PHF	0.90	0.88	0.98	#DIV/0!

STATE OF NEW HAMPSHIRE, DEPARTMENT OF TRANSPORTATION - BUREAU OF TRAFFIC  
 IN COOPERATION WITH U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION

2/22/2016

AUTOMATIC TRAFFIC RECORDER DATA FOR THE MONTH OF JANUARY 2015

**02 229022 HUDSON- CIRCUMFERENCE RD EAST OF NASHUA TL (SAGAMORE BRIDGE) (EB-WB) (01229101-01229102)**

**M O N  
D A T E  
D A Y**

			12 AM	1 AM	2 AM	3 AM	4 AM	5 AM	6 AM	7 AM	8 AM	9 AM	10 AM	11 AM	12 PM	1 PM	2 PM	3 PM	4 PM	5 PM	6 PM	7 PM	8 PM	9 PM	10 PM	11 PM	Total
1	4	1	179	167	114	113	105	228	280	434	568	922	1357	1871	2172	2310	2461	2296	2154	1826	1370	1043	733	499	331	203	23736
1	11	1	237	149	105	81	89	190	337	549	897	1444	2199	2604	2983	2971	2828	2595	2432	1974	1595	1032	816	509	329	227	29172
1	18	1	269	179	110	84	83	170	328	526	944	1594	2260	2706	2942	2625	2437	2116	1880	1630	1130	595	479	444	752	318	26601
1	25	1	153	122	103	89	96	203	315	551	896	1580	2246	2918	3311	3201	3224	3031	2774	2411	1710	1250	796	555	381	251	32167
1	5	2	107	65	91	150	383	1322	2339	3451	2764	1855	1915	2213	2433	2401	2950	3604	3851	4112	2650	1647	1109	813	440	317	42982
1	12	2	104	61	77	144	374	1308	2284	3406	2755	1765	1810	1901	2187	2243	2722	3495	3658	3957	2667	1505	1080	776	458	282	41019
1	19	2	139	117	74	136	276	1064	1736	2684	2331	1897	2185	2725	2946	2950	3318	3578	3719	3613	2316	1538	1046	792	471	265	41916
1	26	2	102	50	76	169	372	1377	2366	3610	3101	2374	2430	2560	2808	2785	3350	4233	4363	3851	2172	1257	627	397	258	142	44830
1	6	3	145	88	94	144	350	1339	2247	3586	2739	1875	1861	2071	2070	2146	2579	3311	3854	4052	2717	1650	1176	873	494	275	41736
1	13	3	171	97	115	176	387	1323	2326	3598	2780	1921	1899	2092	2407	2417	2834	3618	3921	4139	2717	1643	1193	933	542	303	43552
1	20	3	137	85	89	151	361	1397	2372	3600	2856	1993	1944	2180	2380	2403	2849	3521	3871	4183	2606	1623	1226	820	462	264	43373
1	27	3	83	67	60	99	85	96	121	123	109	81	102	113	120	136	222	194	160	182	160	141	137	125	137	64	2917
1	7	4	148	87	117	138	336	1303	2268	3502	2825	1926	1859	2188	2271	2426	2884	3456	3898	4100	2772	1726	1174	947	484	296	43131
1	14	4	154	89	99	142	347	1300	2335	3576	2807	1944	1951	2150	2349	2318	2810	3608	3979	3900	2648	1722	1297	971	541	319	43356
1	21	4	149	104	98	137	336	1338	2325	3522	2836	2006	1969	2036	2451	2384	2756	3585	3991	3993	2627	1711	1244	993	495	336	43422
1	28	4	55	62	66	103	218	764	1315	1831	1697	1554	1478	1604	1866	2012	2524	2750	3045	3250	2079	1391	991	851	481	303	32290
1	1	5	533	364	168	91	63	127	226	330	514	843	1194	1809	2200	2313	2465	2433	2123	1795	1640	1205	798	634	441	259	24568
1	8	5	157	92	95	143	337	1218	2040	3124	2667	2145	1897	1988	2248	2427	2881	3559	3995	4100	2695	1656	1271	997	565	283	42580
1	15	5	152	96	103	149	338	1350	2290	3597	2746	1907	1910	2033	2413	2359	2928	3698	3766	4044	2825	1723	1311	962	579	305	43584
1	22	5	143	88	103	139	359	1317	2316	3525	2680	1996	1920	2230	2480	2458	2885	3719	3898	4151	2790	1757	1259	894	579	321	44007
1	29	5	181	109	119	185	407	1300	2220	3378	2902	2062	1997	2279	2349	2516	2997	3562	3841	4257	2894	1946	1382	994	644	352	44873
1	2	6	113	80	84	124	200	670	1210	1794	1954	2089	2473	2897	3356	3425	3640	3809	3667	3379	2538	1786	1402	1098	689	507	42984
1	9	6	152	115	88	140	348	1318	2096	3124	2304	1621	1397	1790	2166	2363	3172	3699	4025	4024	2734	1911	1412	1138	754	494	42385
1	16	6	184	132	105	161	314	1087	2057	3099	2597	2071	2169	2546	2785	2874	3286	3668	3933	3920	2810	1985	1471	1186	701	470	45611
1	23	6	157	127	115	142	342	1226	2280	3387	2774	2198	2175	2575	2845	2871	3488	3988	4307	4235	3170	2250	1590	1179	780	534	48735
1	30	6	186	164	150	186	373	1149	2034	3011	2577	1828	1776	1948	2178	2352	2739	3247	3617	3550	2627	1740	1338	1076	646	459	40951
1	3	7	260	142	106	112	150	272	537	924	1376	2024	2628	3198	3495	3497	3172	3101	2808	2253	1689	1201	882	730	479	306	35342
1	10	7	250	155	105	117	173	379	548	974	1542	2082	2724	3383	3627	3542	3425	3301	2749	2004	1525	1042	1385	1119	767	492	37410
1	17	7	242	174	107	123	156	405	614	993	1586	2046	2728	3168	3452	3419	3513	3332	3154	2849	2204	1609	1211	1133	763	518	39499
1	24	7	271	157	146	127	173	358	624	876	967	1142	1020	1105	1164	1187	1289	1233	1254	1189	1019	783	696	608	442	331	18161
1	31	7	240	132	123	128	186	395	603	917	1418	1978	2549	3146	3343	3290	3335	3290	3120	2790	2230	1626	1151	988	688	440	38106

TYPE	STATION	YEAR	MONTH	NO. DAYS	AVERAGE SUNDAY	AVERAGE WEEKDAY	AVERAGE SATURDAY	AVERAGE DAILY	COMPUTED VOLUME	PERCENT GAIN	PERCENT LOSS
02	229022	2015	January	31	27919	40218	33704	37581	1164996		
02	229022	2014	January	31	28268	40215	34135	37889	1174564		-0.81%

**PEAK HOUR VOLUMES:**

**AVERAGE AM:**

**AVERAGE MIDDAY:**

**AVERAGE PM:**

SUNDAY	1385	2886	2738	AM - 6 AM TO 10 AM
WEEKDAY	2985	2400	3763	MIDDAY - 10 AM TO 2 PM
SATURDAY	1854	3021	2947	PM - 2 PM TO 8 PM

STATE OF NEW HAMPSHIRE, DEPARTMENT OF TRANSPORTATION - BUREAU OF TRAFFIC  
 IN COOPERATION WITH U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION  
 AUTOMATIC TRAFFIC RECORDER DATA FOR THE MONTH OF FEBRUARY 2015

2/22/2016

**02 229022 HUDSON- CIRCUMFERENCE RD EAST OF NASHUA TL (SAGAMORE BRIDGE) (EB-WB) (01229101-01229102)**

**M O N  
D A T E  
D A Y**

			12 AM	1 AM	2 AM	3 AM	4 AM	5 AM	6 AM	7 AM	8 AM	9 AM	10 AM	11 AM	12 PM	1 PM	2 PM	3 PM	4 PM	5 PM	6 PM	7 PM	8 PM	9 PM	10 PM	11 PM	Total
2	1	1	257	182	106	86	92	202	309	595	971	1657	2260	2765	3011	2882	2810	2583	2505	2119	1143	534	437	369	1084	661	29620
2	8	1	276	174	122	95	86	246	293	487	615	977	1204	1431	1702	1709	1693	1718	1605	1222	970	682	449	348	272	136	18512
2	15	1	140	103	78	91	79	123	163	172	177	270	418	555	763	890	1020	1247	1217	1207	1076	796	526	400	275	198	11984
2	22	1	191	154	113	116	112	223	318	503	719	1106	1549	2014	2431	2557	2542	2457	2299	2087	1749	1154	750	559	393	234	26330
2	2	2	247	89	86	143	254	726	996	1280	1060	638	620	692	833	883	1135	1296	1097	883	574	415	304	250	226	152	14879
2	9	2	80	65	82	126	248	661	1121	1316	1137	758	769	785	947	1025	1272	1598	1548	1411	1016	759	585	443	298	203	18253
2	16	2	117	66	83	149	269	945	1447	2306	1897	1842	2166	2536	2769	2797	3107	3454	3364	3308	2250	1455	1153	872	496	278	39126
2	23	2	121	49	71	144	405	1252	2240	2964	2511	1956	1993	2138	2358	2437	2741	3428	3834	3891	2554	1644	1123	841	513	349	41557
2	3	3	129	95	109	191	397	1179	1790	2556	2544	2213	1981	1955	2306	2361	2798	3410	3713	3882	2700	1661	1186	892	580	296	40924
2	10	3	99	95	111	183	395	1215	1875	2581	2473	2078	1848	1942	2137	2248	2712	3321	3649	3873	2675	1692	1172	909	502	293	40078
2	17	3	154	98	85	174	393	1345	2276	3407	2734	1954	1788	2014	2269	2214	2840	3465	3932	4112	2780	1652	1301	947	547	324	42805
2	24	3	164	105	101	141	397	1287	2228	3181	2529	1897	1927	2119	2318	2366	2656	3296	3714	3955	2683	1704	1180	932	524	272	41676
2	4	4	187	136	125	130	399	1338	2392	3521	2888	2036	1923	2024	2421	2433	2996	3565	3965	4308	2844	1872	1294	1006	542	327	44672
2	11	4	147	100	98	154	350	1314	2363	3520	2979	2011	2028	2272	2385	3268	2932	3623	3974	4173	2855	1935	1456	1009	583	360	45889
2	18	4	161	101	96	137	392	1323	2326	3470	2801	2017	1987	2236	2442	2380	2956	3659	4022	4067	2768	1703	1352	1100	570	316	44382
2	25	4	147	110	103	174	396	1299	2302	3161	2465	1957	2070	2375	2554	2558	2855	3469	3913	4019	2814	1788	1288	996	616	355	43784
2	5	5	207	138	128	188	418	1254	2078	2878	2447	1733	1521	1621	1803	1997	2565	3318	3617	4031	2956	1737	1321	974	509	301	39740
2	12	5	212	142	147	187	390	1329	2341	3511	2805	2080	2011	2172	2427	2307	2891	3506	3468	3702	2764	1823	1263	995	634	338	43445
2	19	5	192	146	134	190	435	1310	2150	3030	2819	2125	1955	2079	2378	2324	2924	3508	3876	3897	2814	1775	1401	1013	574	303	43352
2	26	5	171	113	102	155	404	1294	2329	3114	2558	2007	2009	2312	2561	2484	2877	3487	3992	4002	2858	1855	1368	1005	581	302	43940
2	6	6	157	105	111	181	346	1247	2307	3521	2756	2169	2179	2516	2742	2814	3391	3940	4164	4205	3151	2273	1653	1236	799	506	48469
2	13	6	228	143	131	171	401	1186	2116	3015	2768	2118	2224	2601	2763	2816	3410	4001	4123	4190	3169	2291	1701	1313	845	515	48239
2	20	6	150	108	117	180	381	1207	2252	3307	2692	2066	2162	2534	2733	2722	3495	3889	4326	4087	2965	2047	1457	1176	784	513	47350
2	27	6	145	128	115	141	333	1083	2003	2718	2375	2042	2328	2616	2894	2840	3250	3741	3872	3799	2792	2019	1432	1128	747	478	45019
2	7	7	273	161	120	131	192	422	722	1154	1724	2404	3103	3460	3703	3565	3438	3395	2978	2813	2156	1605	1175	1015	726	520	40955
2	14	7	279	153	131	132	162	383	685	1189	1824	2548	3097	3416	3562	3372	3105	2853	2199	1733	1058	800	570	491	360	242	34344
2	21	7	268	151	126	125	181	421	649	1087	1562	2349	2789	3199	3276	3135	3187	3119	2476	2171	1604	1035	827	833	523	305	35398
2	28	7	238	164	115	118	175	382	675	1090	1530	2177	2736	3275	3383	3381	3382	3327	2969	2876	2310	1742	1320	1120	765	481	39731

TYPE	STATION	YEAR	MONTH	NO. DAYS	AVERAGE SUNDAY	AVERAGE WEEKDAY	AVERAGE SATURDAY	AVERAGE DAILY	COMPUTED VOLUME	PERCENT GAIN	PERCENT LOSS
02	229022	2015	February	28	21612	40879	37607	37659	1054453		
02	229022	2014	February	28	28987	39517	37058	37661	1054511		-0.01%

**PEAK HOUR VOLUMES:**

**AVERAGE AM:**

**AVERAGE MIDDAY:**

**AVERAGE PM:**

	SUNDAY	WEEKDAY	SATURDAY	AM - 6 AM TO 10 AM	MIDDAY - 10 AM TO 2 PM	PM - 2 PM TO 8 PM
AVERAGE AM:	1002	2918	2370			
AVERAGE MIDDAY:		2918	2370			
AVERAGE PM:			2370			

STATE OF NEW HAMPSHIRE, DEPARTMENT OF TRANSPORTATION - BUREAU OF TRAFFIC  
 IN COOPERATION WITH U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION

2/22/2016

AUTOMATIC TRAFFIC RECORDER DATA FOR THE MONTH OF MARCH 2015

**02 229022 HUDSON- CIRCUMFERENCE RD EAST OF NASHUA TL (SAGAMORE BRIDGE) (EB-WB) (01229101-01229102)**

M O N  
D A T E  
D A Y

			12 AM	1 AM	2 AM	3 AM	4 AM	5 AM	6 AM	7 AM	8 AM	9 AM	10 AM	11 AM	12 PM	1 PM	2 PM	3 PM	4 PM	5 PM	6 PM	7 PM	8 PM	9 PM	10 PM	11 PM	Total
3	1	1	277	179	123	104	74	170	328	556	953	1613	2226	2728	2995	3005	2749	2611	2498	2046	1471	979	674	469	348	197	29373
3	8	1	279	179	69	68	103	199	316	515	785	1398	1966	2576	2809	2816	2855	2881	2695	2273	1895	1323	890	665	366	171	30092
3	15	1	277	197	114	88	87	180	304	506	821	1440	2067	2549	2989	2990	2908	2632	2430	1983	1520	1215	757	509	335	207	29105
3	22	1	222	179	101	99	103	191	347	565	961	1639	2291	2798	3259	3209	3166	2921	2634	2331	1896	1319	884	549	355	176	32195
3	29	1	246	175	117	90	91	215	348	614	1025	1788	2319	2907	3393	3396	3092	3094	2761	2470	1845	1395	926	580	367	266	33520
3	2	2	137	80	121	199	432	1331	2325	3392	2658	1827	1817	2052	2251	2316	2738	3535	3810	4023	2634	1594	1121	772	459	265	41889
3	9	2	103	71	68	154	374	1286	2346	3523	2669	1861	1900	2072	2317	2435	2946	3607	3931	4177	2727	1737	1285	859	488	297	43233
3	16	2	98	54	94	145	378	1283	2371	3465	2756	1857	1876	2159	2350	2466	3092	3616	4159	4128	2939	1830	1243	879	476	316	44030
3	23	2	100	63	76	162	435	1303	2464	3514	2789	1988	1986	2151	2368	2429	2992	3824	4115	4068	2728	1724	1229	809	441	298	44056
3	30	2	101	58	80	157	403	1400	2389	3661	2773	1998	1957	2144	2316	2390	2902	3579	4086	4097	2775	1792	1216	859	507	286	43926
3	3	3	127	97	99	137	399	1380	2491	3730	2731	2078	1927	2191	2468	2424	2906	3666	4089	4113	2656	1689	1101	805	464	310	44078
3	10	3	138	99	105	150	389	1299	2393	3552	2810	2008	1953	2191	2356	2445	3024	3552	4193	4158	2780	1738	1350	934	546	306	44469
3	17	3	158	90	100	156	400	1330	2416	3587	2687	1924	1976	2135	2314	2457	2957	3648	3900	4075	2537	1687	1324	836	484	303	43481
3	24	3	125	84	97	143	421	1355	2498	3661	2681	2015	2062	2190	2317	2426	3141	3704	4079	4218	2689	1850	1269	879	503	259	44666
3	31	3	140	88	94	159	412	1409	2525	3805	2797	2114	2058	2334	2421	2473	3189	3814	4121	4381	2852	1865	1337	944	562	316	46210
3	4	4	161	127	138	167	439	1320	2384	3555	2667	1798	1842	2054	2206	2410	2859	3537	4086	4129	2841	1861	1344	904	576	290	43695
3	11	4	136	83	110	135	409	1333	2431	3557	2868	1912	1996	2254	2516	2679	3174	3830	4086	4253	2928	1967	1428	1005	546	319	45955
3	18	4	162	143	90	157	398	1329	2558	3526	2836	1999	1935	2221	2334	2367	2959	3743	4008	4043	2838	1814	1401	989	557	315	44722
3	25	4	129	115	93	145	400	1373	2466	3636	2924	2003	2099	2290	2553	2547	3042	3689	4298	4234	2847	1807	1412	997	517	303	45919
3	5	5	136	105	115	140	416	1377	2473	3633	2769	1980	2052	2224	2387	2447	3029	3614	4079	4293	2715	1780	1335	953	574	308	44934
3	12	5	181	94	109	157	379	1344	2350	3727	2739	2015	1947	2203	2461	2582	3027	3776	4117	4222	2881	2074	1449	1070	583	347	45834
3	19	5	155	98	90	136	385	1363	2481	3602	2768	2164	2014	2237	2467	2541	3060	3761	4183	4412	2871	1979	1572	1043	621	291	46294
3	26	5	142	94	113	150	407	1377	2452	3670	2818	2047	2059	2291	2548	2658	3128	3653	4167	4132	2851	1805	1366	953	552	303	45736
3	6	6	151	110	90	142	414	1282	2415	3521	2772	2120	2182	2500	2796	2946	3596	4012	4200	4075	3031	2047	1557	1207	765	446	48377
3	13	6	177	118	115	142	365	1140	2180	3114	2625	2144	2247	2627	2822	2881	3458	3843	4141	4120	3152	2177	1670	1287	806	503	47854
3	20	6	140	119	108	130	367	1279	2328	3486	2760	2116	2212	2614	2780	2879	3491	4136	4240	4106	2927	1981	1416	1142	750	465	47972
3	27	6	185	121	118	160	387	1218	2228	3310	2672	2153	2255	2545	2793	2828	3503	3899	4198	4074	2992	2091	1614	1231	843	523	47941
3	7	7	260	164	88	136	171	402	662	1173	1717	2302	2909	3410	3537	3414	3433	3305	3052	2850	2331	1768	1284	1090	768	461	40687
3	14	7	265	164	126	116	166	354	590	1076	1538	1989	2605	3015	3172	3242	3104	3137	2723	2632	2112	1662	1226	1045	710	451	37220
3	21	7	246	166	91	127	175	393	602	999	1359	1739	2131	2663	3018	3231	3328	3251	3121	2961	2354	1775	1396	1128	855	511	37620
3	28	7	255	163	133	123	167	379	664	1127	1587	2116	2574	2969	3063	3135	3070	3018	2855	2806	2178	1637	1338	1040	764	458	37619

TYPE	STATION	YEAR	MONTH	NO. DAYS	AVERAGE SUNDAY	AVERAGE WEEKDAY	AVERAGE SATURDAY	AVERAGE DAILY	COMPUTED VOLUME	PERCENT GAIN	PERCENT LOSS
02	229022	2015	March	31	30857	45240	38286	42023	1302702	3.04%	
02	229022	2014	March	31	30240	43485	39977	40783	1264263		

PEAK HOUR VOLUMES:

AVERAGE AM:

AVERAGE MIDDAY:

AVERAGE PM:

	SUNDAY	WEEKDAY	SATURDAY	AM - 6 AM TO 10 AM	MIDDAY - 10 AM TO 2 PM	PM - 2 PM TO 8 PM
AVERAGE AM:	1576	3556	2036	2960	4188	3242

STATE OF NEW HAMPSHIRE, DEPARTMENT OF TRANSPORTATION - BUREAU OF TRAFFIC  
 IN COOPERATION WITH U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION

2/22/2016

AUTOMATIC TRAFFIC RECORDER DATA FOR THE MONTH OF APRIL 2015

**02 229022 HUDSON- CIRCUMFERENCE RD EAST OF NASHUA TL (SAGAMORE BRIDGE) (EB-WB) (01229101-01229102)**

M	O	N	D	A	T	E	D	A	Y	12 AM 1 AM 2 AM 3 AM 4 AM 5 AM 6 AM 7 AM 8 AM 9 AM 10 AM 11 AM 12 PM 1 PM 2 PM 3 PM 4 PM 5 PM 6 PM 7 PM 8 PM 9 PM 10 PM 11 PM																								Total
										12 AM	1 AM	2 AM	3 AM	4 AM	5 AM	6 AM	7 AM	8 AM	9 AM	10 AM	11 AM	12 PM	1 PM	2 PM	3 PM	4 PM	5 PM	6 PM	7 PM	8 PM	9 PM	10 PM	11 PM	
4	5	1	258	161	121	81	55	103	254	513	722	1332	1770	2253	2709	2241	1855	1781	1970	1964	1930	1470	878	573	342	208	25544							
4	12	1	263	181	110	92	95	195	411	738	1249	1827	2553	2983	3182	3245	2968	2912	2725	2387	1913	1559	934	608	375	212	33717							
4	19	1	241	148	120	97	83	201	467	806	1220	2094	2802	3042	3324	3314	3136	3017	2658	2519	1947	1534	998	616	355	226	34965							
4	26	1	267	174	122	75	93	227	459	799	1212	1842	2463	2880	3169	2951	2792	2800	2542	2284	1683	1334	811	618	346	216	32159							
4	6	2	95	46	82	168	433	1386	2489	3619	2831	2074	2021	2345	2561	2500	3123	3828	4089	4260	2876	1907	1348	818	497	301	45697							
4	13	2	111	81	94	146	423	1397	2519	3618	2818	2092	2150	2309	2543	2522	3147	3790	4095	4079	2817	1796	1264	838	477	281	45407							
4	20	2	109	64	84	136	396	1171	2372	3386	2698	2164	2202	2523	2636	2602	3018	3733	3919	3853	2504	1611	1156	773	461	274	43845							
4	27	2	110	77	90	164	399	1369	2404	3100	2518	2089	2052	2406	2572	2567	2922	3560	4013	3953	2763	1923	1269	883	465	282	43950							
4	7	3	143	96	105	154	428	1409	2487	3756	2826	1983	2049	2230	2353	2318	2993	3716	4165	4281	2810	1735	1309	888	508	267	45009							
4	14	3	135	98	99	154	439	1407	2531	3666	2784	2087	1996	2231	2484	2490	3197	3740	4104	4208	2845	1968	1372	954	531	315	45835							
4	21	3	130	103	110	160	434	1383	2453	3641	2746	2174	2084	2374	2516	2601	3068	3863	4244	4290	2893	1939	1420	978	572	284	46460							
4	28	3	140	80	113	158	396	1377	2487	3240	2548	2151	2120	2441	2626	2594	2987	3744	4141	4125	2892	1969	1443	943	577	291	45583							
4	1	4	157	104	99	147	420	1442	2561	3741	2922	2115	2084	2300	2529	2662	3087	3854	4242	4402	3136	2014	1457	998	539	309	47321							
4	8	4	143	85	113	145	428	1409	2575	3747	2755	2147	2024	2456	2488	2458	3109	3677	4052	4054	2779	1811	1250	865	520	286	45376							
4	15	4	124	101	111	135	432	1459	2624	3729	2897	2135	2141	2376	2679	2649	3288	3843	4260	4341	3026	2075	1475	978	565	301	47744							
4	22	4	136	99	94	146	428	1484	2566	3554	2943	2191	2182	2485	2707	2608	3343	3945	4344	4121	3031	2032	1489	978	551	291	47748							
4	29	4	154	111	99	161	401	1394	2503	3230	2730	2122	2097	2531	2515	2669	3020	3619	3979	3940	3036	2006	1485	1032	577	280	45691							
4	2	5	153	113	122	144	431	1404	2459	3719	2798	2202	2093	2415	2556	2676	3254	3905	4467	4512	3370	2181	1610	1206	632	354	48776							
4	9	5	138	113	105	153	432	1352	2468	3610	2706	1998	2009	2183	2400	2394	3160	3713	4142	4234	2823	1940	1415	996	530	381	45395							
4	16	5	143	112	115	169	410	1440	2598	3762	2874	2180	2188	2519	2645	2642	3291	3997	4393	4476	3156	2218	1523	1124	619	294	48888							
4	23	5	136	111	104	178	400	1434	2569	3665	2814	2176	2183	2432	2720	2677	3252	3937	4295	4517	2987	2063	1488	1057	557	313	48065							
4	30	5	149	103	88	163	432	1392	2352	3265	2645	2264	2187	2530	2664	2690	3223	3737	4178	4257	2983	2111	1518	1101	630	317	46979							
4	3	6	203	130	115	144	374	1231	2169	3164	2684	2448	2552	2958	3363	3305	3881	4399	4430	4098	3052	2221	1763	1317	787	529	51317							
4	10	6	169	98	118	163	391	1161	2224	3206	2684	2119	2304	2684	2878	2851	3423	3945	4098	4014	3011	2127	1683	1246	799	469	47865							
4	17	6	183	127	115	176	443	1359	2435	3615	2855	2322	2423	2665	3036	2968	3771	4303	4478	4292	3146	2333	1764	1259	787	460	51315							
4	24	6	151	128	115	165	380	1229	2255	3235	2680	2270	2367	2704	2989	2905	3638	4143	4385	4298	3100	2207	1584	1151	701	511	49291							
4	4	7	277	192	107	138	172	368	669	1118	1778	2538	3250	3588	3785	3712	3620	3655	3201	3037	2609	2026	1561	1154	883	509	43947							
4	11	7	253	172	122	102	173	402	726	1327	1858	2346	3049	3503	3566	3604	3465	3424	3149	2968	2413	1979	1371	1081	800	498	42351							
4	18	7	247	135	119	122	171	383	799	1360	2025	2698	3304	3512	3628	3457	3387	3341	3089	3046	2331	1845	1524	1158	785	459	42925							
4	25	7	248	168	128	117	208	409	841	1396	1856	2411	3025	3241	3369	3322	3388	3205	3117	2905	2283	1828	1395	1098	763	408	41129							

TYPE	STATION	YEAR	MONTH	NO. DAYS	AVERAGE SUNDAY	AVERAGE WEEKDAY	AVERAGE SATURDAY	AVERAGE DAILY	COMPUTED VOLUME	PERCENT GAIN	PERCENT LOSS
02	229022	2015	April	30	31596	46980	42588	44343	1330294	2.79%	
02	229022	2014	April	30	30774	45766	41068	43141	1294230		

PEAK HOUR VOLUMES:

	AVERAGE AM:	AVERAGE MIDDAY:	AVERAGE PM:	
SUNDAY	1774	3112	2718	AM - 6 AM TO 10 AM
WEEKDAY	3512	2681	4260	MIDDAY - 10 AM TO 2 PM
SATURDAY	2498	3596	3474	PM - 2 PM TO 8 PM

STATE OF NEW HAMPSHIRE, DEPARTMENT OF TRANSPORTATION - BUREAU OF TRAFFIC  
 IN COOPERATION WITH U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION

2/22/2016

AUTOMATIC TRAFFIC RECORDER DATA FOR THE MONTH OF MAY 2015

02 229022 HUDSON- CIRCUMFERENCE RD EAST OF NASHUA TL (SAGAMORE BRIDGE) (EB-WB) (01229101-01229102)

M O N  
D A T E  
D A Y

			12 AM	1 AM	2 AM	3 AM	4 AM	5 AM	6 AM	7 AM	8 AM	9 AM	10 AM	11 AM	12 PM	1 PM	2 PM	3 PM	4 PM	5 PM	6 PM	7 PM	8 PM	9 PM	10 PM	11 PM	Total
5	3	1	303	371	142	102	109	258	447	824	1268	1849	2591	3019	3088	3186	3036	2814	2537	2268	1913	1423	1010	632	367	217	33774
5	10	1	237	181	98	108	84	255	447	875	1390	2076	2817	3058	3265	3111	2935	2747	2559	2337	2170	1613	1211	711	481	210	34976
5	17	1	275	187	114	95	109	274	501	901	1349	2132	2931	3134	3541	3218	3064	2848	2740	2474	1994	1559	1176	685	460	256	36017
5	24	1	231	154	104	77	96	237	438	795	1199	1823	2342	2595	2873	2790	2537	2285	2202	2078	1776	1508	1090	808	559	355	30952
5	31	1	282	241	134	94	114	235	412	809	1198	1828	2508	2822	3191	3239	2890	2752	2608	2245	1766	1271	812	650	392	236	32729
5	4	2	119	71	99	170	441	1457	2614	3668	2920	2156	2219	2430	2623	2569	3141	3988	4145	4337	2967	2143	1462	928	544	307	47518
5	11	2	110	66	103	162	454	1457	2608	3614	2858	2232	2167	2448	2599	2516	3205	3840	4281	4383	3051	2157	1429	887	522	287	47436
5	18	2	121	82	92	164	447	1512	2529	3596	2880	2126	2132	2383	2640	2601	3247	4019	4237	4365	2959	2287	1529	904	576	293	47721
5	25	2	186	124	70	65	115	240	458	731	1224	1847	2410	2982	2808	2889	2684	2570	2251	2074	1717	1454	1049	711	422	192	31273
5	5	3	132	102	99	148	438	1518	2607	3768	2887	2199	2139	2366	2595	2642	3233	3927	4269	4413	2981	2126	1522	936	570	311	47928
5	12	3	153	100	97	177	449	1498	2569	3798	2888	2211	2227	2416	2650	2573	3321	3818	4273	4355	3044	2275	1596	986	539	313	48326
5	19	3	139	96	111	167	446	1528	2598	3714	2897	2129	2185	2434	2641	2542	3259	3859	4235	4443	3121	2059	1653	1041	577	324	48198
5	26	3	112	65	94	152	438	1518	2591	3781	2965	2262	2231	2479	2616	2640	3205	3964	4123	4327	2894	2217	1641	993	526	292	48126
5	6	4	147	111	96	154	436	1494	2684	3694	2925	2259	2141	2447	2686	2625	3229	3947	4385	4457	3197	2361	1675	1075	568	336	49129
5	13	4	178	114	81	172	438	1583	2684	3716	2895	2212	2168	2416	2719	2719	3244	3952	4359	4407	3116	2268	1616	1060	611	311	49039
5	20	4	148	115	112	165	438	1647	2726	3775	2930	2178	2218	2512	2672	2733	3429	3978	4226	4371	3209	2258	1736	1183	612	313	49684
5	27	4	130	109	99	158	461	1569	2742	3685	3019	2211	2314	2528	2614	2712	3266	4132	4476	4376	3142	2282	1769	1133	572	316	49815
5	7	5	141	122	104	149	442	1498	2629	3797	2948	2264	2259	2546	2659	2747	3476	4138	4518	4581	3289	2474	1834	1196	653	316	50780
5	14	5	143	122	115	147	447	1533	2757	3684	2884	2178	2343	2528	2809	2776	3318	4099	4318	4323	3192	2442	1805	1157	611	338	50069
5	21	5	162	109	115	155	484	1537	2637	3719	2948	2242	2338	2635	2760	2870	3420	4135	4372	4415	3263	2351	1734	1182	648	383	50614
5	28	5	153	101	111	163	483	1599	2728	3794	3009	2273	2297	2600	2675	2817	3356	3998	4448	4270	3020	2246	1788	1154	655	322	50060
5	1	6	208	163	127	158	391	1325	2258	3063	2548	2395	2588	2839	3181	3110	3584	4175	4329	3974	2961	2237	1634	1213	737	505	49703
5	8	6	182	136	116	175	395	1336	2366	3322	2867	2463	2543	2941	3098	3106	3646	4106	4420	4294	3345	2522	1954	1421	868	492	52114
5	15	6	175	123	103	161	446	1454	2589	3597	2916	2427	2526	2891	3054	3024	3711	4294	4476	4220	3177	2521	1884	1404	897	513	52583
5	22	6	223	151	145	153	399	1195	2226	3246	2713	2487	2650	3123	3332	3326	3961	4255	4068	3733	2768	2235	1744	1277	806	492	50708
5	29	6	179	133	116	156	466	1515	2651	3697	3020	2468	2606	2912	3021	3201	3846	4137	4490	4224	3330	2391	1914	1376	844	520	53213
5	2	7	245	179	132	109	182	428	751	1364	1871	2397	2984	3297	3369	3339	3318	3240	3099	2885	2458	1840	1629	1209	745	445	41515
5	9	7	255	159	95	125	171	446	821	1394	2012	2575	3007	3390	3618	3626	3712	3579	3313	3105	2704	2248	1780	1280	931	596	44942
5	16	7	245	185	133	132	186	429	868	1330	1883	2518	2959	3224	3504	3369	3254	3313	3209	2952	2591	1952	1536	1227	901	540	42440
5	23	7	232	164	113	122	153	358	779	1224	1836	2449	2995	3208	3325	3265	3180	2993	2852	2683	2190	1799	1468	1150	708	401	39647
5	30	7	232	150	149	143	183	477	850	1335	2007	2638	3071	3190	3324	3218	3075	3091	2814	2760	2271	1850	1512	1209	791	490	40830

TYPE	STATION	YEAR	MONTH	NO. DAYS	AVERAGE SUNDAY	AVERAGE WEEKDAY	AVERAGE SATURDAY	AVERAGE DAILY	COMPUTED VOLUME	PERCENT GAIN	PERCENT LOSS
02	229022	2015	May	31	33690	48764	41875	45221	1401859	3.50%	
02	229022	2014	May	31	32420	46464	40521	43693	1354497		

PEAK HOUR VOLUMES:

	AVERAGE AM:	AVERAGE MIDDAY:	AVERAGE PM:
SUNDAY	1942	3221	2892
WEEKDAY	3551	2828	4322
SATURDAY	2515	3430	3323

AM - 6 AM TO 10 AM  
 MIDDAY - 10 AM TO 2 PM  
 PM - 2 PM TO 8 PM



STATE OF NEW HAMPSHIRE, DEPARTMENT OF TRANSPORTATION - BUREAU OF TRAFFIC  
 IN COOPERATION WITH U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION

2/22/2016

AUTOMATIC TRAFFIC RECORDER DATA FOR THE MONTH OF JUNE 2015

02 229022 HUDSON- CIRCUMFERENCE RD EAST OF NASHUA TL (SAGAMORE BRIDGE) (EB-WB) (01229101-01229102)

M O N  
D A Y  
D A Y

			12 AM	1 AM	2 AM	3 AM	4 AM	5 AM	6 AM	7 AM	8 AM	9 AM	10 AM	11 AM	12 PM	1 PM	2 PM	3 PM	4 PM	5 PM	6 PM	7 PM	8 PM	9 PM	10 PM	11 PM	Total
6	7	1	290	184	125	76	114	262	515	833	1289	1981	2629	3003	3222	3102	2946	2954	2799	2371	2014	1604	1170	735	448	215	34881
6	14	1	304	189	123	68	114	289	585	1069	1283	2102	2597	3027	3091	2984	2858	2665	2514	2310	1966	1614	1258	744	450	284	34488
6	21	1	270	160	107	88	112	215	371	590	944	1531	2044	2628	3051	2974	2930	2780	2751	2396	2127	1692	1200	775	455	264	32455
6	28	1	286	190	115	89	118	221	363	574	831	1494	2148	2564	2854	2853	2926	2777	2495	2204	1795	1290	980	641	453	263	30524
6	1	2	117	72	104	157	469	1499	2538	3549	2764	2022	1984	2318	2585	2634	3137	3864	4066	4224	2810	1909	1271	925	496	302	45816
6	8	2	99	85	97	165	465	1533	2716	3474	2935	2154	2151	2446	2503	2601	3097	3974	4384	4323	2881	2029	1448	970	495	275	47300
6	15	2	137	82	86	168	446	1490	2423	3213	2760	2112	2060	2427	2642	2570	3087	3716	4089	4216	2925	1954	1332	938	519	329	45721
6	22	2	118	78	112	177	484	1515	2598	3361	2709	2215	2354	2526	2671	2715	3051	3803	4416	4235	2951	2161	1646	1074	569	320	47859
6	29	2	105	79	104	160	468	1452	2434	3221	2685	2167	2197	2590	2806	2877	3079	3856	4229	4272	3100	2101	1574	1109	660	352	47677
6	2	3	121	117	105	156	433	1504	2611	3696	2854	2113	2133	2301	2464	2626	3314	3891	4286	4250	2866	1901	1426	992	550	312	47022
6	9	3	169	107	118	155	487	1576	2758	3702	2945	2136	2172	2418	2567	2697	3161	4007	4372	4459	2983	2045	1568	1031	574	326	48533
6	16	3	133	105	91	153	484	1596	2648	3524	2825	2182	2089	2472	2712	2611	3089	3985	4348	4444	2953	2132	1543	1053	613	339	48124
6	23	3	147	111	123	167	505	1552	2641	3396	2844	2082	2276	2640	2461	2524	2928	3717	4253	4184	2888	2004	1562	1018	559	338	46920
6	30	3	173	106	110	166	481	1564	2545	3310	2819	2291	2285	2579	2738	2728	3254	3851	4324	4295	2976	2190	1689	1141	630	374	48619
6	3	4	137	104	106	146	475	1551	2827	3833	3007	2190	2211	2599	2653	2623	3438	4168	4510	4507	3096	2339	1786	1196	589	355	50446
6	10	4	176	125	113	159	471	1608	2756	3833	2930	2259	2271	2647	2733	2745	3325	3944	4603	4572	3132	2322	1796	1173	609	355	50657
6	17	4	148	131	107	149	507	1582	2821	3410	2884	2224	2315	2537	2685	2823	3239	3887	4509	4564	3187	2304	1847	1199	637	304	50000
6	24	4	177	127	123	179	495	1596	2653	3376	2897	2305	2360	2698	2840	2670	3161	3915	4434	4408	2972	2308	1780	1256	671	443	49844
6	4	5	168	108	97	169	478	1588	2752	3816	2918	2269	2307	2422	2771	2741	3369	4214	4562	4606	3186	2377	1800	1240	690	363	51011
6	11	5	195	100	97	164	484	1571	2758	3737	2961	2308	2371	2490	2744	2773	3437	4114	4626	4530	3162	2417	1935	1220	700	357	51251
6	18	5	174	121	109	159	462	1589	2628	3466	2949	2240	2241	2535	2888	2843	3500	4024	4428	4462	3175	2331	1825	1313	731	391	50584
6	25	5	192	128	107	168	483	1519	2681	3353	2901	2335	2445	2636	2854	2772	3158	3966	4360	4494	3201	2243	1853	1242	664	383	50138
6	5	6	189	138	122	160	452	1375	2471	3479	2882	2530	2735	2932	3122	3121	3755	4168	4375	4086	3168	2346	1890	1418	816	547	52277
6	12	6	157	162	110	156	496	1494	2512	3573	2821	2537	2665	3061	3156	3213	3720	4132	4515	4122	3079	2358	1928	1382	886	594	52829
6	19	6	178	141	128	162	429	1300	2404	2952	2786	2450	2649	3051	3285	3241	3764	4138	4356	3996	3107	2294	1968	1393	814	559	51545
6	26	6	211	144	130	161	444	1448	2393	3114	2712	2385	2491	2907	3215	3273	3758	4127	4342	4230	3025	2286	1845	1417	883	564	51505
6	6	7	277	166	117	122	211	460	903	1365	1910	2460	2965	3287	3465	3255	3178	3279	3041	2851	2300	1993	1591	1361	891	494	41942
6	13	7	285	156	119	122	217	434	826	1429	1951	2580	3185	3387	3554	3360	3214	3098	2944	2730	2209	1918	1602	1305	843	499	41967
6	20	7	220	156	131	134	207	482	859	1407	2041	2654	3087	3464	3501	3284	3253	3173	2883	2838	2334	1879	1528	1200	875	528	42118
6	27	7	234	181	125	130	236	476	836	1291	1837	2493	2945	3188	3456	3256	3131	3022	2740	2633	2228	1742	1433	1182	750	477	40022

TYPE	STATION	YEAR	MONTH	NO. DAYS	AVERAGE SUNDAY	AVERAGE WEEKDAY	AVERAGE SATURDAY	AVERAGE DAILY	COMPUTED VOLUME	PERCENT GAIN	PERCENT LOSS
02	229022	2015	June	30	33087	49349	41512	46136	1384075	3.90%	
02	229022	2014	June	30	32585	48030	40134	44403	1332093		

PEAK HOUR VOLUMES:

AVERAGE AM:

AVERAGE MIDDAY:

AVERAGE PM:

SUNDAY	1777	3054	2917	AM - 6 AM TO 10 AM
WEEKDAY	3472	2824	4417	MIDDAY - 10 AM TO 2 PM
SATURDAY	2547	3494	3219	PM - 2 PM TO 8 PM

STATE OF NEW HAMPSHIRE, DEPARTMENT OF TRANSPORTATION - BUREAU OF TRAFFIC  
 IN COOPERATION WITH U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION

2/22/2016

AUTOMATIC TRAFFIC RECORDER DATA FOR THE MONTH OF JULY 2015

**02 229022 HUDSON- CIRCUMFERENCE RD EAST OF NASHUA TL (SAGAMORE BRIDGE) (EB-WB) (01229101-01229102)**

M O N  
D A T E  
D A Y

			12 AM	1 AM	2 AM	3 AM	4 AM	5 AM	6 AM	7 AM	8 AM	9 AM	10 AM	11 AM	12 PM	1 PM	2 PM	3 PM	4 PM	5 PM	6 PM	7 PM	8 PM	9 PM	10 PM	11 PM	Total
7	5	1	289	150	96	70	93	238	376	614	933	1533	2012	2541	2685	2622	2380	2348	2241	1929	1791	1343	1128	787	517	250	28966
7	12	1	295	207	122	83	114	260	472	809	1133	1853	2323	2784	2815	2668	2565	2567	2377	2058	1861	1584	1208	782	474	277	31691
7	19	1	256	193	132	85	131	250	505	837	1195	1787	2182	2771	2854	2647	2494	2463	2353	2049	2015	1630	1187	750	459	249	31474
7	26	1	277	209	140	89	117	222	491	684	1029	1658	2233	2637	3093	2988	2997	2758	2639	2308	1841	1455	1056	748	470	269	32408
7	6	2	139	105	111	168	392	1205	2058	2595	2501	2036	2215	2509	2680	2574	2908	3410	3862	3615	2617	1958	1506	987	592	299	43042
7	13	2	160	108	108	166	455	1476	2458	3118	2811	2203	2158	2581	2649	2659	3022	3796	4092	4181	2861	2099	1541	1050	615	316	46683
7	20	2	129	105	114	148	501	1439	2437	3192	2781	2178	2171	2525	2604	2553	2987	3667	4205	4101	2846	2092	1613	1034	565	334	46321
7	27	2	143	88	99	166	494	1489	2493	3237	2738	2152	2230	2567	2676	2805	3160	3694	3903	4069	2784	1972	1553	978	513	322	46325
7	7	3	160	94	122	164	460	1442	2388	3202	2748	2209	2198	2508	2757	2705	2961	3627	4084	4104	2824	2018	1581	1006	602	306	46270
7	14	3	164	131	127	166	470	1493	2531	3354	2851	2248	2182	2474	2712	2596	3104	2698	2654	4095	2829	2224	1666	1156	583	368	44876
7	21	3	163	113	134	164	470	1466	2536	3422	2769	2172	2153	2567	2687	2494	3051	3804	4183	4274	2935	2173	1658	1068	601	369	47426
7	28	3	148	107	137	168	482	1530	2548	3397	2808	2255	2198	2523	2737	2571	3015	3924	4249	4215	2897	2173	1667	1108	635	359	47851
7	1	4	160	119	106	154	475	1411	2568	3093	2623	2106	2189	2525	2850	2836	3260	4031	4341	4358	3280	2246	1626	1190	585	357	48489
7	8	4	162	117	129	124	471	1481	2458	3159	2559	2118	2210	2585	2759	2788	3167	3880	4172	4222	2918	2236	1695	1171	621	346	47548
7	15	4	145	136	131	159	466	1520	2506	3400	2834	2196	2306	2606	2695	2789	3274	3909	4379	4426	3110	2356	1720	1165	577	312	49117
7	22	4	162	134	122	134	477	1570	2442	3381	2844	2338	2223	2490	2711	2692	3152	3760	4268	4249	3104	2215	1712	1169	623	349	48321
7	29	4	143	127	121	158	464	1542	2493	3289	2821	2243	2293	2516	2758	2609	2991	3796	4264	4280	2938	2169	1760	1216	640	339	47970
7	2	5	212	141	114	174	449	1404	2364	3002	2802	2437	2603	2958	3228	3358	3779	4203	4234	3911	3022	2367	1994	1251	773	431	51211
7	9	5	197	118	118	150	454	1448	2460	3163	2731	2220	2265	2524	2821	2825	3194	3844	4350	4406	3169	2337	1761	1126	611	375	48667
7	16	5	122	131	111	164	457	1489	2507	3321	2839	2285	2374	2492	2778	2753	3302	3993	4375	4351	3249	2379	1836	1352	702	392	49754
7	23	5	182	129	131	175	470	1513	2500	3416	2848	2204	2302	2676	2802	2700	3231	3935	4383	4393	3101	2303	1757	1129	730	410	49420
7	30	5	187	115	130	172	483	1501	2484	3250	2792	2270	2262	2613	2753	2834	3260	3773	4304	4045	3023	2140	1600	1158	613	356	48118
7	3	6	266	160	117	138	239	516	968	1431	1912	2472	2929	3428	3543	3262	3355	3149	2991	2663	2281	1908	1556	1123	808	411	41626
7	10	6	183	118	127	156	428	1382	2221	2984	2777	2339	2568	2929	3143	3101	3648	3994	4280	3948	2997	2265	1797	1341	794	449	49969
7	17	6	210	167	124	160	417	1226	2156	2776	2609	2493	2424	2898	3148	3069	3533	3865	3991	3706	3020	2259	1724	1206	807	481	48469
7	24	6	201	150	139	169	461	1380	2284	3083	2736	2271	2439	2889	3075	3097	3669	3981	4203	3852	3009	2266	1760	1286	799	512	49711
7	31	6	182	144	139	148	424	1265	2159	2861	2693	2504	2497	2957	3207	3027	3451	3894	3996	3778	2905	2157	1886	1343	762	480	48859
7	4	7	216	158	114	90	94	219	467	733	1081	1445	1810	2286	2465	2280	2143	1946	1577	1558	1361	1294	1008	821	948	487	26601
7	11	7	271	184	140	110	200	468	803	1299	1809	2442	2934	3185	3216	3120	2923	2821	2690	2481	2188	1829	1585	1257	733	529	39217
7	18	7	263	160	122	126	214	409	689	1180	1609	2136	2739	3064	3245	3233	3135	3002	2905	2593	2138	1789	1506	1134	760	503	38654
7	25	7	243	185	183	132	204	464	831	1292	1779	2323	2826	3268	3182	3290	3145	2907	2817	2625	2168	1866	1506	1177	819	466	39698

TYPE	STATION	YEAR	MONTH	NO. DAYS	AVERAGE SUNDAY	AVERAGE WEEKDAY	AVERAGE SATURDAY	AVERAGE DAILY	COMPUTED VOLUME	PERCENT GAIN	PERCENT LOSS
02	229022	2015	July	31	31135	47654	36042	44024	1364752		
02	229022	2014	July	31	30352	45864	36220	42618	1321170	3.30%	

PEAK HOUR VOLUMES:

AVERAGE AM:

AVERAGE MIDDAY:

AVERAGE PM:

	SUNDAY	WEEKDAY	SATURDAY	AM - 6 AM TO 10 AM	MIDDAY - 10 AM TO 2 PM	PM - 2 PM TO 8 PM
AVERAGE AM:	1708	3138	2086			
AVERAGE MIDDAY:	2862	2881	3054			
AVERAGE PM:	2610	4180	2836			

STATE OF NEW HAMPSHIRE, DEPARTMENT OF TRANSPORTATION - BUREAU OF TRAFFIC  
 IN COOPERATION WITH U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION

2/22/2016

AUTOMATIC TRAFFIC RECORDER DATA FOR THE MONTH OF AUGUST 2015

02 229022 HUDSON- CIRCUMFERENCE RD EAST OF NASHUA TL (SAGAMORE BRIDGE) (EB-WB) (01229101-01229102)

M O N  
D A T E  
D A Y

			12 AM	1 AM	2 AM	3 AM	4 AM	5 AM	6 AM	7 AM	8 AM	9 AM	10 AM	11 AM	12 PM	1 PM	2 PM	3 PM	4 PM	5 PM	6 PM	7 PM	8 PM	9 PM	10 PM	11 PM	Total
8	2	1	295	215	107	92	111	255	499	776	1168	1853	2307	2708	2901	2836	2663	2603	2492	2157	1943	1539	1176	754	457	266	32173
8	9	1	273	167	117	86	109	247	434	798	1109	1755	2273	2704	2996	2911	2933	2658	2460	2279	1847	1510	1172	702	460	267	32267
8	16	1	264	175	122	110	125	244	450	844	1179	1816	2356	2750	2916	2790	2651	2532	2399	2241	1815	1535	1132	805	520	259	32030
8	23	1	303	200	145	80	123	250	445	719	1077	1675	2270	2795	2936	3087	3204	2915	2544	2297	1894	1431	963	631	430	232	32646
8	30	1	272	210	137	112	123	269	465	813	1216	1834	2404	2984	3079	3094	2978	2759	2593	2338	2072	1558	1027	673	436	263	33709
8	3	2	154	102	119	160	448	1437	2450	3151	2727	2166	2241	2478	2693	2698	2974	3733	4077	4176	2773	2088	1539	1003	514	276	46177
8	10	2	151	88	121	177	453	1431	2489	3023	2672	2092	2099	2540	2744	2673	3002	3749	4101	4074	2780	2166	1567	965	566	303	46026
8	17	2	140	71	117	170	470	1417	2414	3152	2664	2128	2159	2499	2626	2664	2993	3734	4104	4116	2788	2049	1486	919	529	310	45719
8	24	2	117	81	117	179	506	1380	2511	3108	2478	2146	2168	2545	2860	2854	3215	3831	4260	4284	2941	2045	1472	965	586	306	46955
8	31	2	107	78	104	173	511	1386	2588	3350	2588	2181	2390	2661	2835	2756	3328	3840	4242	4360	3089	2233	1500	901	542	311	48054
8	4	3	130	118	104	185	453	1548	2570	3213	2683	2198	2193	2539	2811	2644	2887	3582	4056	4135	2985	2126	1600	986	630	291	46667
8	11	3	161	100	120	177	463	1468	2481	3307	2641	2155	2101	2263	2463	2420	2925	3759	4104	4085	2871	1976	1423	974	604	313	45354
8	18	3	139	126	113	180	513	1496	2530	3309	2666	2188	2225	2548	2841	2669	3132	3751	4158	4198	2939	2172	1547	1064	532	320	47356
8	25	3	152	131	121	167	502	1485	2564	3383	2733	2185	2236	2454	2782	2823	3199	3832	4271	4310	3080	2196	1432	1025	572	308	47943
8	5	4	188	107	121	184	469	1471	2598	3324	2704	2253	2277	2621	2935	2689	3265	3937	4354	4472	3090	2308	1774	1168	624	341	49274
8	12	4	115	130	124	163	477	1476	2511	3348	2759	2255	2377	2581	2842	2765	3224	3794	4434	4284	3061	2299	1752	1091	603	349	48814
8	19	4	198	132	112	165	506	1498	2531	3184	2748	2166	2318	2683	2710	2682	3174	3841	4030	4271	3085	2269	1696	1149	606	356	48110
8	26	4	147	116	128	161	498	1476	2573	3385	2662	2268	2326	2494	2734	2675	3301	3830	4341	4311	3117	2385	1682	1110	603	337	48660
8	6	5	155	110	150	148	429	1494	2553	3351	2714	2281	2435	2589	2772	2849	3218	3957	4348	4287	3136	2329	1792	1114	655	369	49235
8	13	5	189	137	136	180	493	1467	2502	3188	2664	2248	2292	2579	2692	2772	3160	3897	4321	4262	3226	2275	1687	1195	715	418	48695
8	20	5	157	132	139	179	456	1464	2509	3245	2726	2251	2380	2633	2736	2661	3137	3812	4233	4344	3069	2414	1835	1120	662	342	48636
8	27	5	166	116	103	182	476	1457	2592	3404	2834	2373	2403	2689	2842	2792	3351	4002	4398	4314	3032	2358	1705	1161	628	373	49751
8	7	6	199	138	119	169	454	1322	2386	3003	2653	2342	2529	2866	3088	3184	3590	4038	4255	3941	2949	2239	1733	1188	793	542	49720
8	14	6	215	157	139	146	448	1245	2153	2703	2594	2339	2511	2910	3052	3198	3493	3681	3939	3824	2905	2298	1696	1244	782	473	48145
8	21	6	212	157	124	164	462	1333	2237	3027	2577	2217	2451	2855	3140	3206	3612	4072	4101	3801	2978	2171	1727	1205	743	502	49074
8	28	6	173	129	122	201	454	1174	2179	2868	2550	2357	2540	2977	3172	3129	3627	4056	4059	3874	2900	2235	1730	1169	806	485	48966
8	1	7	259	183	146	122	197	490	734	1263	1760	2329	2782	3119	3103	2945	2925	2625	2705	2477	2130	1765	1537	1125	725	460	37906
8	8	7	263	177	123	122	211	462	778	1143	1726	2344	2760	3138	3238	3019	3006	2877	2634	2423	2095	1750	1410	1124	671	459	37953
8	15	7	265	144	131	136	208	448	764	1301	1792	2329	2716	3037	3238	3025	3016	2941	2688	2452	1989	1692	1312	1178	737	476	38015
8	22	7	238	151	135	105	217	466	714	1119	1687	2252	2740	3204	3452	3305	3267	3080	2792	2563	2246	1798	1338	1093	739	533	39234
8	29	7	293	204	148	112	232	448	807	1288	1874	2361	2868	3226	3218	3181	3136	3047	2839	2580	2256	1930	1431	1130	727	469	39805

TYPE	STATION	YEAR	MONTH	NO. DAYS	AVERAGE SUNDAY	AVERAGE WEEKDAY	AVERAGE SATURDAY	AVERAGE DAILY	COMPUTED VOLUME	PERCENT GAIN	PERCENT LOSS
02	229022	2015	August	31	32565	47968	38583	43970	1363069		
02	229022	2014	August	31	31112	46606	36923	42545	1318906	3.35%	

PEAK HOUR VOLUMES:

AVERAGE AM:

AVERAGE MIDDAY:

AVERAGE PM:

SUNDAY	1787	2999	2886	AM - 6 AM TO 10 AM
WEEKDAY	3192	2853	4241	MIDDAY - 10 AM TO 2 PM
SATURDAY	2323	3255	3070	PM - 2 PM TO 8 PM

STATE OF NEW HAMPSHIRE, DEPARTMENT OF TRANSPORTATION - BUREAU OF TRAFFIC  
IN COOPERATION WITH U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION

2/22/2016

AUTOMATIC TRAFFIC RECORDER DATA FOR THE MONTH OF SEPTEMBER 2015

**02 229022 HUDSON- CIRCUMFERENCE RD EAST OF NASHUA TL (SAGAMORE BRIDGE) (EB-WB) (01229101-01229102)**

**M O N  
D A Y  
D A T E**

			12 AM	1 AM	2 AM	3 AM	4 AM	5 AM	6 AM	7 AM	8 AM	9 AM	10 AM	11 AM	12 PM	1 PM	2 PM	3 PM	4 PM	5 PM	6 PM	7 PM	8 PM	9 PM	10 PM	11 PM	Total
9	6	1	247	155	105	72	82	240	440	696	1057	1769	2204	2565	2769	2644	2475	2377	2138	1976	1686	1465	1050	751	513	343	29819
9	13	1	281	181	121	87	153	225	478	761	1168	1859	2570	2905	3196	3129	2922	2732	2489	2132	1673	1368	811	545	348	184	32318
9	20	1	266	166	133	90	108	250	501	827	1223	2068	2555	3190	3141	2660	2436	2356	2397	2383	1908	1316	855	558	386	191	31964
9	27	1	303	180	127	90	99	259	489	875	1303	1927	2626	3046	3145	2622	2531	2482	2594	2197	1912	1404	836	545	386	192	32170
9	7	2	179	87	86	97	112	240	489	753	1196	1747	2332	2758	2935	2754	2638	2460	2328	2042	1764	1449	987	614	360	203	30610
9	14	2	108	65	106	165	531	1488	2759	3663	2848	2070	2069	2416	2505	2668	3294	3840	4301	4215	2865	1987	1261	783	465	250	46722
9	21	2	99	67	110	162	514	1511	2636	3702	2728	1958	2069	2399	2455	2646	3151	3834	4322	4214	2844	1807	1162	830	458	253	45931
9	28	2	116	73	106	152	522	1555	2753	3785	2712	2027	2195	2345	2623	2646	3260	3923	4345	4212	2784	1667	1184	764	476	268	46493
9	1	3	139	106	118	172	519	1500	2711	3755	2942	2308	2337	2697	2664	2647	3110	3923	4290	4251	3033	2169	1399	944	530	294	48558
9	8	3	85	58	116	149	512	1450	2789	3760	2910	2262	2290	2377	2451	2646	3190	3875	4153	4003	2823	1952	1396	856	508	287	46898
9	15	3	114	107	123	163	516	1540	2875	3962	2776	2117	2048	2430	2510	2716	3123	4017	4325	4319	3026	2114	1447	895	494	278	48035
9	22	3	135	111	111	153	573	1578	2857	3847	2859	2085	2110	2334	2554	2547	3214	3927	4323	4302	2868	1788	1253	889	521	276	47215
9	29	3	137	93	112	159	536	1628	2861	3798	2822	2137	2179	2361	2447	2599	3167	3956	4308	4250	2804	1781	1225	873	522	284	47039
9	2	4	154	127	113	179	499	1547	2816	3835	2861	2157	2175	2559	2633	2723	3278	3984	4307	4246	3092	2218	1565	1002	576	302	48948
9	9	4	143	124	114	188	533	1571	2922	3896	2841	2128	2130	2350	2562	2590	3437	3859	4254	4366	3064	2157	1494	958	539	265	48485
9	16	4	142	114	111	148	510	1576	2904	3758	2845	2093	2039	2305	2574	2575	3246	4074	4413	4393	2965	2273	1458	942	569	295	48322
9	23	4	125	116	120	148	540	1615	2795	3718	2894	2009	2151	2373	2637	2744	3194	4063	4384	4222	2999	2002	1383	940	499	278	47949
9	30	4	123	136	123	161	492	1602	2683	3537	2722	1870	1844	2189	2303	2411	3121	3839	4161	4178	2975	1758	1374	913	543	292	45350
9	3	5	134	108	103	177	495	1494	2782	3822	2860	2382	2350	2575	2777	2799	3457	4046	4396	4335	3092	2179	1446	1012	639	354	49814
9	10	5	138	107	116	187	537	1500	2827	3826	2806	2135	2230	2386	2735	2781	3256	4011	4225	4018	2867	1937	1234	868	505	399	47631
9	17	5	156	125	122	177	523	1572	2817	3817	2820	2200	2145	2391	2639	2601	3296	4038	4571	4306	3133	2103	1533	991	617	296	48989
9	24	5	155	114	115	167	546	1594	2819	3898	2938	2259	2192	2427	2566	2726	3339	3955	4400	4290	3201	2148	1527	1047	584	353	49360
9	4	6	201	128	111	170	476	1260	2310	2982	2644	2397	2629	3045	3311	3527	3931	4172	4047	3555	2814	2110	1519	1134	727	455	49655
9	11	6	215	165	148	182	476	1231	2382	3324	2822	2203	2363	2727	3026	3020	3662	4227	4209	4091	3134	2251	1615	1335	739	485	50032
9	18	6	182	117	121	160	496	1479	2633	3617	2723	2422	2370	2890	2819	2900	3653	4091	4312	4059	3109	2234	1612	1212	747	417	50375
9	25	6	123	132	119	178	512	1355	2448	3517	2786	2309	2454	2715	2897	3078	3675	4057	4346	3918	3059	2146	1633	1158	785	530	49930
9	5	7	238	147	141	138	150	363	726	1153	1658	2288	2711	3093	3057	2966	2951	2798	2658	2305	2049	1780	1278	1047	705	380	36780
9	12	7	229	153	126	142	205	483	833	1351	1819	2420	2921	3235	3394	3119	3154	3100	3013	2796	2298	1841	1291	1026	677	483	40109
9	19	7	218	158	133	135	217	430	914	1268	2039	2462	2967	3303	3205	3392	3114	3189	2954	2767	2304	1819	1323	1095	689	474	40569
9	26	7	277	175	142	126	196	444	824	1329	2036	2505	2887	3379	3428	3345	3374	3215	3041	2908	2318	1668	1377	1090	705	491	41280

TYPE	STATION	YEAR	MONTH	NO. DAYS	AVERAGE SUNDAY	AVERAGE WEEKDAY	AVERAGE SATURDAY	AVERAGE DAILY	COMPUTED VOLUME	PERCENT GAIN	PERCENT LOSS
02	229022	2015	September	30	31568	47379	39684	44245	1327350	2.57%	
02	229022	2014	September	30	30956	46123	38902	43138	1294145		

PEAK HOUR VOLUMES:

	AVERAGE AM:	AVERAGE MIDDAY:	AVERAGE PM:
SUNDAY	1906	3075	2607
WEEKDAY	3617	2756	4241
SATURDAY	2419	3327	3167

AM - 6 AM TO 10 AM  
MIDDAY - 10 AM TO 2 PM  
PM - 2 PM TO 8 PM

STATE OF NEW HAMPSHIRE, DEPARTMENT OF TRANSPORTATION - BUREAU OF TRAFFIC  
 IN COOPERATION WITH U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION

2/22/2016

AUTOMATIC TRAFFIC RECORDER DATA FOR THE MONTH OF OCTOBER 2015

**02 229022 HUDSON- CIRCUMFERENCE RD EAST OF NASHUA TL (SAGAMORE BRIDGE) (EB-WB) (01229101-01229102)**

M O N T H	D A T E	D A Y	02 229022 HUDSON- CIRCUMFERENCE RD EAST OF NASHUA TL (SAGAMORE BRIDGE) (EB-WB) (01229101-01229102)																								Total
			12 AM	1 AM	2 AM	3 AM	4 AM	5 AM	6 AM	7 AM	8 AM	9 AM	10 AM	11 AM	12 PM	1 PM	2 PM	3 PM	4 PM	5 PM	6 PM	7 PM	8 PM	9 PM	10 PM	11 PM	
10	4	1	269	164	118	86	110	245	460	859	1294	1945	2415	2908	3047	3121	3109	2856	2838	2279	1789	1294	870	506	373	198	33153
10	11	1	257	166	129	68	103	241	453	855	1267	1885	2493	2815	3039	2841	2860	2773	2226	1820	1603	1482	1018	604	482	270	31750
10	18	1	317	209	136	81	104	223	421	772	1271	2063	2877	3392	3687	3391	3157	2876	2556	2240	1660	1266	696	487	386	215	34483
10	25	1	314	235	126	86	127	241	430	773	1206	1868	2494	2998	3217	2611	2396	2784	2598	2528	1920	1285	839	579	371	223	32249
10	5	2	111	60	95	163	499	1545	2685	3725	2811	2072	2075	2325	2482	2603	3189	4002	4296	4105	2862	1770	1145	773	458	262	46113
10	12	2	140	85	109	108	344	1038	1920	2556	2259	2136	2505	2845	3052	3011	3282	3747	3900	3583	2521	1620	1120	778	428	259	43346
10	19	2	130	90	108	145	489	1482	2652	3615	2787	2045	2037	2385	2629	2564	3093	3849	4291	4013	2758	1697	1191	760	447	252	45509
10	26	2	88	73	105	143	506	1517	2643	3643	2793	2148	2106	2420	2564	2538	3151	3975	4355	4162	2810	1757	1161	812	450	284	46204
10	6	3	139	105	119	144	546	1581	2803	3810	2793	2218	2121	2363	2530	2729	3296	3953	4198	4307	2983	1945	1365	896	515	327	47786
10	13	3	121	105	110	168	511	1584	2827	3779	2843	2122	2125	2343	2464	2570	3272	3827	4302	4164	2675	1802	1274	825	535	269	46617
10	20	3	110	108	120	154	521	1651	2687	3867	2758	2117	2073	2349	2527	2564	3226	3923	4367	4222	2860	1805	1322	879	538	262	47010
10	27	3	144	113	111	154	534	1618	2717	3763	2816	2224	2130	2431	2612	2629	3324	3909	4476	4165	2822	1766	1309	913	505	312	47497
10	7	4	132	103	124	159	521	1580	2780	3752	2946	2164	2141	2504	2622	2710	3196	3911	4498	4350	3045	1928	1387	956	519	303	48331
10	14	4	119	108	129	180	526	1610	2827	3771	2974	2070	2155	2458	2667	2674	3217	3909	4341	4301	2894	1810	1311	938	526	323	47838
10	21	4	140	118	129	152	496	1622	2804	3737	2915	2074	2164	2365	2613	2697	3183	3919	4334	4202	2779	1844	1394	1028	548	292	47549
10	28	4	127	115	128	163	533	1577	2774	3793	2937	2167	2163	2401	2653	2596	3274	3947	4377	3948	2713	1811	1296	904	527	270	47194
10	1	5	132	145	118	153	538	1609	2844	3849	2816	2265	2233	2423	2705	2820	3440	4120	4521	4593	3098	2018	1398	989	588	306	49721
10	8	5	124	129	129	146	524	1609	2769	3809	2857	2182	2269	2475	2606	2830	3382	4107	4420	4267	3023	2065	1421	994	605	324	49066
10	15	5	132	107	128	160	552	1593	2708	3790	2911	2207	2260	2400	2672	2817	3444	4077	4591	4466	3107	1974	1499	994	613	314	49516
10	22	5	152	132	115	163	514	1630	2725	3806	2824	2219	2218	2400	2490	2783	3305	4023	4453	4280	2852	2026	1371	1028	626	317	48452
10	29	5	119	119	134	159	523	1668	2715	3769	2812	2239	2282	2460	2743	2875	3476	4170	4510	4544	3185	2130	1421	948	519	402	49922
10	2	6	173	134	132	172	497	1517	2576	3519	2860	2313	2492	2725	2939	3048	3758	4161	4519	4089	2913	2086	1550	1177	720	497	50567
10	9	6	172	133	122	168	498	1292	2384	3282	2735	2258	2486	2754	2974	3134	3616	3843	3987	3729	2924	1938	1522	1172	736	429	48288
10	16	6	165	107	127	161	495	1560	2567	3539	2841	2378	2383	2715	2958	3056	3905	4261	4587	4103	3209	2084	1588	1300	775	510	51374
10	23	6	172	128	143	158	492	1364	2438	3368	2707	2341	2410	2836	3037	3130	3724	4114	4282	4063	3045	2096	1604	1176	871	508	50207
10	30	6	212	170	169	154	512	1437	2513	3666	2823	2411	2519	2908	3191	3224	3944	4368	4643	4330	3162	2267	1631	1341	796	525	52916
10	3	7	238	132	133	123	217	440	694	1225	1857	2438	2943	3298	3525	3617	3450	3239	3086	2881	2332	1822	1311	1060	731	473	41265
10	10	7	245	152	157	126	201	434	751	1348	1929	2581	3001	3393	3474	3266	3337	3201	3040	2790	2383	1607	1205	1066	736	492	40915
10	17	7	226	175	152	126	223	467	757	1315	1906	2464	3001	3423	3374	3627	3407	3378	3068	2893	2158	1629	1308	1047	729	513	41366
10	24	7	241	170	135	133	214	460	780	1305	1915	2465	2958	3453	3455	3510	3391	3402	3199	2957	2268	1775	1310	1108	743	563	41910
10	31	7	281	157	141	119	222	452	747	1204	1837	2415	3101	3473	3568	3537	3433	3420	3095	2474	1474	1425	1338	1018	680	490	40101

TYPE	STATION	YEAR	MONTH	NO. DAYS	AVERAGE SUNDAY	AVERAGE WEEKDAY	AVERAGE SATURDAY	AVERAGE DAILY	COMPUTED VOLUME	PERCENT GAIN	PERCENT LOSS
02	229022	2015	October	31	32909	48228	41111	45104	1398215	2.33%	
02	229022	2014	October	31	31978	46898	39951	44076	1366359		

PEAK HOUR VOLUMES:

AVERAGE AM:

AVERAGE MIDDAY:

AVERAGE PM:

SUNDAY	1940	3266	2978	AM - 6 AM TO 10 AM
WEEKDAY	3646	2809	4385	MIDDAY - 10 AM TO 2 PM
SATURDAY	2473	3559	3406	PM - 2 PM TO 8 PM

STATE OF NEW HAMPSHIRE, DEPARTMENT OF TRANSPORTATION - BUREAU OF TRAFFIC  
 IN COOPERATION WITH U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION

2/22/2016

AUTOMATIC TRAFFIC RECORDER DATA FOR THE MONTH OF NOVEMBER 2015

**02 229022 HUDSON- CIRCUMFERENCE RD EAST OF NASHUA TL (SAGAMORE BRIDGE) (EB-WB) (01229101-01229102)**

M	O	N	D	A	T	E	D	A	Y	02 229022 HUDSON- CIRCUMFERENCE RD EAST OF NASHUA TL (SAGAMORE BRIDGE) (EB-WB) (01229101-01229102)																								Total
										12 AM	1 AM	2 AM	3 AM	4 AM	5 AM	6 AM	7 AM	8 AM	9 AM	10 AM	11 AM	12 PM	1 PM	2 PM	3 PM	4 PM	5 PM	6 PM	7 PM	8 PM	9 PM	10 PM	11 PM	
11	1	1	319	180	223	71	120	249	465	859	1416	2007	2713	3081	3309	3035	2929	2836	2509	2063	1506	1119	697	494	305	176	32681							
11	8	1	272	168	132	82	103	267	501	879	1386	2286	2814	2952	3248	2691	2486	2311	2580	2080	1577	1250	771	519	380	174	31909							
11	15	1	314	235	114	92	93	198	397	752	1092	1794	2523	2883	3099	3012	3033	3010	2359	1775	1529	972	1118	629	392	232	31647							
11	22	1	297	218	124	89	86	244	384	706	1083	1701	2515	2870	3161	3215	3145	2930	2730	2126	1759	1304	848	607	440	217	32799							
11	29	1	295	198	130	89	95	192	372	586	1011	1661	2431	2933	3168	3145	3082	2885	2685	2130	1729	1298	773	515	377	207	31987							
11	2	2	92	76	96	138	562	1686	2838	3816	2794	2102	2158	2262	2473	2589	3083	3943	4240	3969	2450	1570	1077	766	473	274	45527							
11	9	2	104	72	111	144	537	1554	2870	3682	2801	2161	2225	2288	2546	2499	3033	3681	4172	4358	2833	1815	1267	860	595	342	46550							
11	16	2	99	78	91	139	361	1392	2402	3641	3054	2248	2041	2317	2541	2544	3028	3768	4166	4345	2843	1737	1223	937	555	340	45890							
11	23	2	159	105	111	131	379	1399	2416	3613	3102	2330	2239	2520	2730	2641	3195	3897	4159	4309	2968	1928	1274	867	563	295	47330							
11	30	2	183	80	89	148	348	1323	2365	3595	3032	2328	2166	2404	2655	2634	3304	3901	4195	4328	2974	1880	1335	924	581	315	47087							
11	3	3	117	120	125	153	585	1662	2863	3915	2678	2170	2222	2521	2643	2653	3321	3915	4272	3792	2696	1635	1212	877	545	288	46980							
11	10	3	175	120	134	147	350	1460	2537	3904	3061	2278	2099	2271	2597	2406	3037	3868	4085	4291	2839	2058	1461	1000	656	380	47214							
11	17	3	175	84	138	141	379	1445	2465	3699	3074	2245	2094	2277	2576	2550	3098	3776	4086	4443	3007	1953	1441	947	612	351	47056							
11	24	3	228	138	146	203	358	1329	2368	3624	3076	2409	2427	2443	2892	2868	3362	3941	4351	4559	3068	2166	1546	1208	718	378	49806							
11	4	4	129	127	121	148	527	1645	2918	3793	2793	2150	2106	2418	2540	2633	3244	4004	4435	4092	2643	1723	1267	915	449	246	47066							
11	11	4	188	120	151	142	321	1165	2043	2931	2583	2270	2402	2794	3082	3113	3153	3732	3979	4026	2893	1817	1400	978	640	356	46279							
11	18	4	152	104	144	150	348	1427	2505	3748	3048	2226	2172	2408	2639	2653	3163	3830	4209	4380	2960	1971	1452	1085	661	384	47819							
11	25	4	191	116	138	164	350	1238	2106	2954	2785	2519	2637	2949	3425	3662	3889	4222	4014	3559	2560	1990	1564	1166	747	496	49441							
11	5	5	120	118	110	173	578	1650	2865	3914	2881	2222	2191	2546	2608	2754	3372	4043	4504	4054	2703	1848	1380	945	588	366	48533							
11	12	5	151	117	131	141	375	1388	2492	3801	3067	2264	2066	2322	2642	2783	3206	3761	4059	4288	2976	1909	1335	1053	675	420	47422							
11	19	5	186	116	133	137	373	1402	2482	3749	3127	2362	2127	2463	2559	2651	3251	4011	4230	4368	3038	2038	1526	1136	673	439	48577							
11	26	5	307	193	140	80	89	137	266	462	666	968	1281	1918	2444	1836	1223	1130	1748	2096	2332	2292	2095	1583	1257	995	27538							
11	6	6	151	138	148	154	512	1390	2530	3452	2825	2505	2496	2803	2888	3167	3693	4131	4370	4039	2796	1928	1529	1149	760	462	50016							
11	13	6	196	118	129	151	382	1304	2337	3576	3107	2467	2381	2784	3058	3060	3729	4211	4414	4305	3035	2057	1522	1268	844	547	50982							
11	20	6	180	136	155	163	380	1186	2182	3331	3011	2438	2526	2853	2998	3024	3591	4160	4386	4314	3094	2189	1631	1390	854	567	50739							
11	27	6	685	531	347	294	381	651	1040	1647	2064	2384	2825	3191	3388	3290	3343	3384	3381	3029	2406	1936	1544	1258	960	559	44518							
11	7	7	217	172	149	118	237	498	895	1404	2123	2630	3086	3485	3437	3252	3266	3311	3231	2843	2128	1593	1260	1138	742	529	41744							
11	14	7	255	175	150	149	188	454	765	1340	1897	2576	3153	3436	3610	3533	3466	3436	3251	2991	2337	1754	1290	1121	822	545	42694							
11	21	7	271	191	164	144	212	447	771	1229	1870	2502	3096	3358	3539	3454	3497	3582	3294	3042	2300	1772	1329	1232	854	560	42710							
11	28	7	295	169	132	100	161	259	579	954	1423	2114	2643	2983	3221	3286	3091	3113	3000	2683	2090	1620	1324	1097	878	580	37795							

TYPE	STATION	YEAR	MONTH	NO. DAYS	AVERAGE SUNDAY	AVERAGE WEEKDAY	AVERAGE SATURDAY	AVERAGE DAILY	COMPUTED VOLUME	PERCENT GAIN	PERCENT LOSS	
02	229022	2015	November	30	32205	46780	41236	43611	1308336	4.36%		
02	229022	2014	November	30	30690	44976	40151	41790	1253712			
PEAK HOUR VOLUMES:					AVERAGE AM:		AVERAGE MIDDAY:		AVERAGE PM:			
					SUNDAY	1890	3208	2954	AM - 6 AM TO 10 AM			
					WEEKDAY	3433	2815	4203	MIDDAY - 10 AM TO 2 PM			
					SATURDAY	2456	3480	3368	PM - 2 PM TO 8 PM			

STATE OF NEW HAMPSHIRE, DEPARTMENT OF TRANSPORTATION - BUREAU OF TRAFFIC  
 IN COOPERATION WITH U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION

2/22/2016

AUTOMATIC TRAFFIC RECORDER DATA FOR THE MONTH OF DECEMBER 2015

**02 229022 HUDSON- CIRCUMFERENCE RD EAST OF NASHUA TL (SAGAMORE BRIDGE) (EB-WB) (01229101-01229102)**

M	O	N	D	A	T	E	D	A	Y																									Total
										12 AM	1 AM	2 AM	3 AM	4 AM	5 AM	6 AM	7 AM	8 AM	9 AM	10 AM	11 AM	12 PM	1 PM	2 PM	3 PM	4 PM	5 PM	6 PM	7 PM	8 PM	9 PM	10 PM	11 PM	
12	6	1	365	172	153	91	84	208	368	709	1141	1893	2651	3070	3375	3241	3135	3000	2777	2034	1597	1340	1005	708	447	264	33828							
12	13	1	394	257	150	134	85	196	416	660	1131	1884	2546	3092	3300	3166	3116	3003	2982	2431	1904	1403	953	638	468	341	34650							
12	20	1	490	212	166	94	98	211	409	807	1366	2012	2765	3227	3545	3025	2786	2598	2858	2463	2112	1644	1181	830	602	383	35884							
12	27	1	300	192	114	79	105	174	342	522	829	1497	2211	2671	3103	2538	2391	2240	2430	2249	1786	1239	940	683	532	261	29428							
12	7	2	113	87	83	133	353	1377	2381	3683	3088	2242	2304	2545	2783	2726	3250	3933	4282	4342	3117	1866	1408	982	593	376	48047							
12	14	2	146	74	96	140	359	1313	2383	3611	3129	2456	2334	2563	2832	2866	3216	3915	4005	4265	2968	2057	1452	1053	653	412	48298							
12	21	2	164	92	107	125	382	1343	2254	3455	3095	2680	2757	2983	3274	3266	3717	4334	4505	4615	3359	2318	1828	1266	867	516	53302							
12	28	2	179	89	103	121	325	1079	1775	2432	2456	2351	2617	2992	3207	3280	3588	4121	4196	4047	2795	1927	1418	1113	686	394	47291							
12	1	3	158	98	146	140	378	1401	2408	3781	3045	2278	2217	2352	2627	2572	3093	3794	4166	4202	3023	1840	1322	1008	609	343	47001							
12	8	3	139	78	122	148	384	1337	2455	3777	3110	2311	2234	2454	2612	2619	3188	3962	4159	4406	3093	2054	1465	1042	638	358	48145							
12	15	3	161	98	146	130	398	1417	2461	3851	3129	2438	2357	2510	2748	2826	3307	4020	4360	4602	3293	2064	1555	1059	679	420	50029							
12	22	3	229	163	140	151	378	1338	2335	3491	3210	2604	2692	2951	3157	3149	3617	4308	4399	4571	3403	2509	1954	1429	963	578	53719							
12	29	3	204	149	129	215	452	953	1380	1808	1614	1267	1115	1216	1402	1582	1908	2306	2577	2465	1677	1180	950	792	528	340	28209							
12	2	4	169	130	133	143	393	1403	2364	3581	3006	2300	2152	2327	2554	2497	2966	3765	4034	4220	3049	2078	1437	1143	666	361	46871							
12	9	4	165	110	136	149	377	1382	2434	3700	3199	2328	2287	2508	2689	2811	3195	3986	4236	4438	3160	2017	1648	1185	670	363	49173							
12	16	4	182	129	149	146	361	1401	2467	3705	3176	2396	2365	2608	2772	2901	3410	4232	4488	4649	3341	2264	1759	1235	754	423	51313							
12	23	4	276	153	125	155	373	1279	2228	3107	3103	2817	2995	3294	3547	3576	4044	4717	4721	4249	3328	2489	2071	1688	1103	717	56155							
12	30	4	179	105	118	152	318	1092	1707	2257	2322	2154	2310	2699	2986	3062	3393	3847	3777	3762	2714	1867	1441	1170	710	366	44508							
12	3	5	187	109	128	155	356	1357	2491	3716	3075	2377	2268	2479	2718	2792	3242	4026	4343	4487	3259	2045	1656	1138	691	378	49473							
12	10	5	152	117	128	154	402	1409	2392	3778	3081	2397	2323	2557	2809	2804	3392	4057	4329	4503	3118	2326	1667	1161	783	436	50275							
12	17	5	197	118	127	155	356	1429	2460	3719	3219	2437	2466	2710	2887	2948	3441	4106	4236	4371	3279	2286	1752	1308	918	514	51439							
12	24	5	1322	179	146	154	292	735	1329	1929	2414	2819	3294	3657	4055	3703	3758	3491	3073	2939	2061	1364	1353	1397	1260	747	47471							
12	31	5	220	127	123	140	260	863	1508	1995	2160	2228	2677	3152	3614	3773	3945	4251	3515	2821	2110	1491	919	728	534	341	43495							
12	4	6	203	135	118	161	344	1150	2213	3286	2888	2496	2478	2730	3033	3254	3757	4201	4356	4192	3198	2237	1709	1364	972	582	51057							
12	11	6	175	154	109	149	366	1285	2296	3547	3043	2562	2582	2899	3188	3134	3824	4341	4466	4411	3249	2292	1816	1471	1043	743	53145							
12	18	6	225	173	172	137	342	1158	2156	3277	3042	2703	2771	3258	3430	3453	4057	4474	4459	4198	3287	2483	1879	1574	1240	746	54694							
12	25	6	325	188	81	52	40	72	160	263	491	764	1042	1547	1921	1630	1447	1363	1442	1367	1295	1169	1111	886	605	342	19603							
12	5	7	280	187	148	151	176	389	700	1252	1796	2907	3115	3409	3630	3782	3574	3442	3380	3052	2446	1945	1532	1235	971	637	44136							
12	12	7	307	180	122	125	170	377	753	1265	1924	2592	3252	3609	3658	3610	3629	3558	3388	3012	2496	1900	1448	1320	1112	706	44513							
12	19	7	354	223	145	129	183	420	770	1333	2008	2565	3272	3649	3773	3817	3776	3608	3380	3195	2616	2045	1707	1494	1158	797	46417							
12	26	7	170	85	72	84	114	249	471	843	1312	2015	2593	3107	3322	3292	3313	3182	3027	2687	2058	1691	1322	1103	738	455	37305							

TYPE	STATION	YEAR	MONTH	NO. DAYS	AVERAGE SUNDAY	AVERAGE WEEKDAY	AVERAGE SATURDAY	AVERAGE DAILY	COMPUTED VOLUME	PERCENT GAIN	PERCENT LOSS
02	229022	2015	December	31	33448	47509	43093	45125	1398874	3.08%	
02	229022	2014	December	31	32209	46210	41364	43778	1357130		

PEAK HOUR VOLUMES:

	AVERAGE AM:	AVERAGE MIDDAY:	AVERAGE PM:
SUNDAY	1822	3331	2885
WEEKDAY	3194	2961	4164
SATURDAY	2520	3645	3573

AM - 6 AM TO 10 AM  
 MIDDAY - 10 AM TO 2 PM  
 PM - 2 PM TO 8 PM

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

### Total Primary Jobs

	2017	
	Count	Share
Total Primary Jobs	9,972	100.0%

Jobs Counts by ZIP Codes (ZCTA) Where Workers Live - Primary Jobs				Route 3A		U.S. Route 3		Daniel Webster Highway		Dracut Road	Total
				North	South	North	South	North	South	South	
		2017									
		Count	Share								
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%
<b>TOTALS</b>				<b>17.1%</b>	<b>3.0%</b>	<b>47.8%</b>	<b>13.7%</b>	<b>5.5%</b>	<b>1.4%</b>	<b>11.5%</b>	<b>100.0%</b>
<b>USE</b>				<b>15.0%</b>	<b>3.0%</b>	<b>50.0%</b>	<b>15.0%</b>	<b>5.0%</b>	<b>2.0%</b>	<b>10.0%</b>	<b>100.0%</b>



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

<b>Weekday Peak Hour Data</b>				
<b>Month</b>	<b>Volume</b>		<b>Peak Month Seas. Adj. Factors</b>	
	<b>Weekday AM</b>	<b>Weekday PM</b>	<b>Weekday AM</b>	<b>Weekday PM</b>
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
<b>Average</b>	<b>3,351</b>	<b>4,176</b>		

Oct. Weekday A.M. Peak-Hour Seasonal Adjustment Factor =  $3,646/3,646 = 1.000$

Oct. Weekday P.M. Peak-Hour Seasonal Adjustment Factor =  $4,417/4,385 = 1.007$

<b>Average Daily Data</b>		
<b>Month</b>	<b>Volume</b>	<b>Avg Month Seas. Adj. Factors</b>
	<b>Weekday</b>	<b>Weekday</b>
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
<b>Average</b>	<b>46,412</b>	

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

## **Appendix C**

### **Capacity Analysis – 2019 Existing Traffic Conditions**

**2019 Existing Weekday A.M.**

1: River Road (Route 3A)/Lowell Road (Route 3A) & Dracut Road & Steele Road  
Lanes, Volumes, Timings

2019 Existing AM



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

1: River Road (Route 3A)/Lowell Road (Route 3A) & Dracut Road & Steele Road  
Lanes, Volumes, Timings

2019 Existing AM

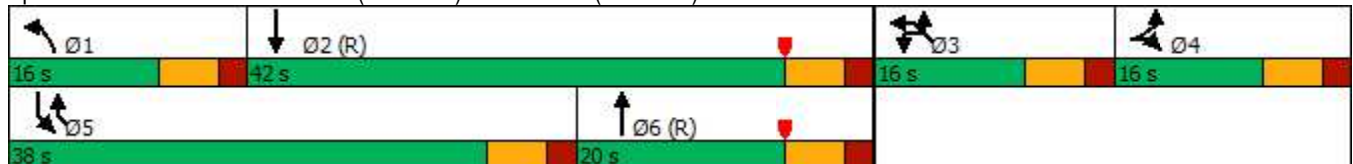


Lane Group	EBL	EBR	EBR2	NBL	NBT	NBR	SBL	SBT	SBR	NWL	NWR
Approach Delay	20.0			30.6			21.4			14.8	
Approach LOS	B			C			C			B	
Queue Length 50th (ft)	2	0		71			302	110		1	184
Queue Length 95th (ft)	9	0		113			364	2		5	#227
Internal Link Dist (ft)	511			678			1653			542	
Turn Bay Length (ft)	50			775			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



## 2: Lowell Road (Route 3A) & Site Driveway/Rena Avenue Lanes, Volumes, Timings

2019 Existing AM

												
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	

## 2: Lowell Road (Route 3A) & Site Driveway/Rena Avenue Lanes, Volumes, Timings

2019 Existing AM



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%

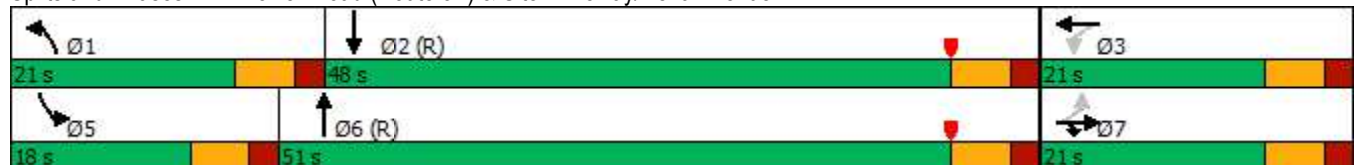
ICU Level of Service A

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



### 3: Lowell Road (Route 3A) & Sam's Club Driveway/Walmart Driveway Lanes, Volumes, Timings

2019 Existing AM

												
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
Fr <sub>t</sub>			0.850			0.850			0.850			0.850
Fl <sub>t</sub> Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3467	1852	1568	3502	1900	1589	3467	3539	1583	3433	3574	1583
Fl <sub>t</sub> 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



3: Lowell Road (Route 3A) & Sam's Club Driveway/Walmart Driveway  
Lanes, Volumes, Timings

2019 Existing AM

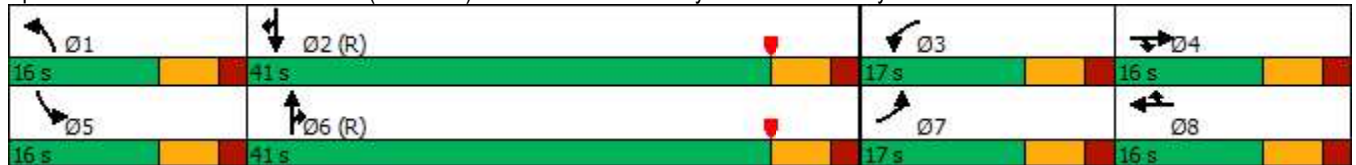


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		26.1			10.4			15.0			17.1	
Approach LOS		C			B			B			B	
Queue Length 50th (ft)	29	2	0	4	3	0	18	244	0	25	243	1
Queue Length 95th (ft)	54	12	0	14	15	0	44	83	m0	46	325	m1
Internal Link Dist (ft)		321			369			900			1109	
Turn Bay 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



#### 4: Lowell Road (Route 3A) & Sagamore Bridge Road Lanes, Volumes, Timings

2019 Existing AM



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
Fr <sub>t</sub>		0.850				0.850
Fl <sub>t</sub> Protected	0.950		0.950			
Satd. Flow (prot)	3662	1689	3467	3539	3539	1568
Fl <sub>t</sub> 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

# 4: Lowell Road (Route 3A) & Sagamore Bridge Road Lanes, Volumes, Timings

2019 Existing AM

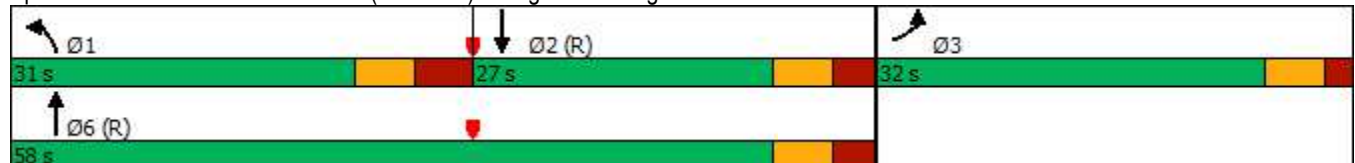


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Approach Delay	19.8			32.1	29.6	
Approach LOS	B			C	C	
Queue Length 50th (ft)	246	0	~214	8	97	~11
Queue Length 95th (ft)	#376	0	#407	4	133	#267
Internal Link Dist (ft)	849			1109	919	
Turn Bay Length (ft)			525			200
Base Capacity (vph)	1149	1689	985	2011	786	1568
Starvation 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



5: Lowell Road (Route 3A) & Flagstone Drive/Wason Road  
Lanes, Volumes, Timings

2019 Existing AM

												
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	81.0	56.0	21.0	71.0	
Total Split (%)	14.1%	14.1%	16.8%	30.4%	30.4%	11.4%	16.8%	44.0%	30.4%	11.4%	38.6%	
Maximum Green (s)	20.0	20.0	25.0	50.0	50.0	15.0	25.0	75.0	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	

# 5: Lowell Road (Route 3A) & Flagstone Drive/Wason Road Lanes, Volumes, Timings

2019 Existing AM

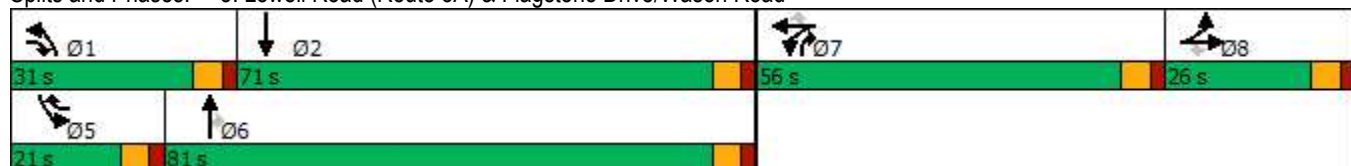


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		50.4			66.5			32.3				51.7
Approach LOS		D			E			C				D
Queue Length 50th (ft)		32	168	342	342	0	249	282	0	17		559
Queue Length 95th (ft)		67	247	490	490	0	#463	408	17	48		705
Internal Link Dist (ft)		725			506			919				1435
Turn 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



6: Lowell Road (Route 3A) & Hampshire Drive/Oblate Drive  
Lanes, Volumes, Timings

2019 Existing AM

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	

6: Lowell Road (Route 3A) & Hampshire Drive/Oblate Drive  
Lanes, Volumes, Timings

2019 Existing AM



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



7: Lowell Road (Route 3A) & Executive Drive  
Lanes, Volumes, Timings

2019 Existing AM

												
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		0.542			0.732		0.950			0.950		
Satd. Flow (perm)	0	895	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		26.0	26.0	26.0	16.0	66.0		16.0	66.0	
Total Split (%)	24.1%	24.1%		24.1%	24.1%	24.1%	14.8%	61.1%		14.8%	61.1%	
Maximum Green (s)	20.0	20.0		20.0	20.0	20.0	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)		13.5	27.0		17.4	17.4	10.2	42.8		9.1	41.7	
Actuated g/C Ratio		0.15	0.31		0.20	0.20	0.12	0.49		0.10	0.48	
v/c Ratio		0.34	0.03		0.79	0.31	0.88	0.30		0.66	0.76	
Control Delay		41.2	3.1		56.7	13.1	81.8	13.3		59.6	21.6	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		41.2	3.1		56.7	13.1	81.8	13.3		59.6	21.6	
LOS		D	A		E	B	F	B		E	C	



# 7: Lowell Road (Route 3A) & Executive Drive Lanes, Volumes, Timings

2019 Existing AM

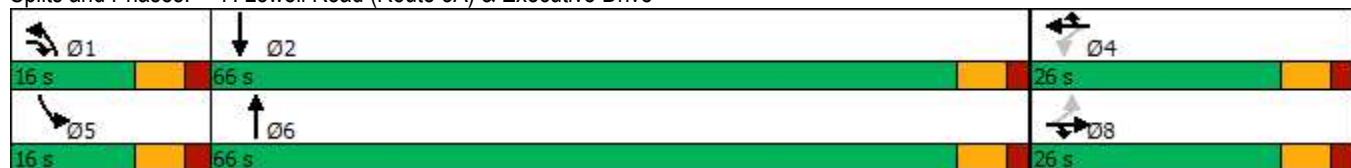


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		33.0			40.5			31.1				24.9
Approach LOS		C			D			C				C
Queue Length 50th (ft)		22	0		112	11	100	84		65		295
Queue Length 95th (ft)		55	4		#217	50	#270	115		#167		370
Internal Link Dist (ft)		412			497			1711				1088
Turn Bay Length (ft)			225			80	350			150		
Base Capacity (vph)		209	590		322	455	199	2394		201		2426
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		0.66	0.28	0.88	0.21		0.59		0.52

## Intersection Summary

Area Type:	Other
Cycle Length:	108
Actuated Cycle Length:	87.7
Natural Cycle:	65
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.88
Intersection Signal Delay:	28.9
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



# 8: Lowell Road (Route 3A) & Fox Hollow Drive/Nottingham Square Driveway Lanes, Volumes, Timings

2019 Existing AM



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							0.950			0.950		
Satd. Flow (perm)	0	1810	1583	0	1963	1669	1745	1766	1615	1805	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			76			25			76			
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)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	110.0	110.0	10.0	110.0	
Total Split (%)	7.7%	7.7%	7.7%	7.7%	7.7%	7.7%	7.7%	84.6%	84.6%	7.7%	84.6%	
Maximum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	104.0	104.0	4.0	104.0	
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	
Act Effct Green (s)		4.0	4.0		4.0	12.0	4.0	111.2	111.2	4.0	115.2	
Actuated g/C Ratio		0.03	0.03		0.03	0.09	0.03	0.86	0.86	0.03	0.89	
v/c Ratio		0.25	0.49		0.13	0.07	0.08	0.36	0.00	0.31	0.77	
Control Delay		72.8	22.0		66.2	9.0	64.2	3.7	0.0	73.3	7.2	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.4	
Total Delay		72.8	22.0		66.2	9.0	64.2	3.7	0.0	73.3	7.6	
LOS		E	C		E	A	E	A	A	E	A	

# 8: Lowell Road (Route 3A) & Fox Hollow Drive/Nottingham Square Driveway Lanes, Volumes, Timings

2019 Existing AM

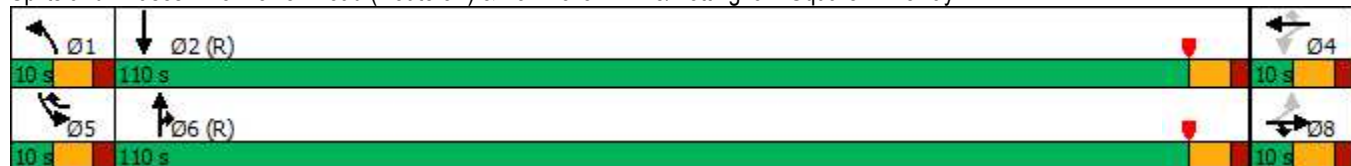


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		31.6			30.8			4.1				8.4
Approach LOS		C			C			A				A
Queue Length 50th (ft)		12	0		7	0	3	111	0	15		160
Queue Length 95th (ft)		32	22		22	8	16	153	0	m17		m913
Internal Link Dist (ft)		518			182			1325				469
Turn Bay Length (ft)			50			100	210		325	125		
Base Capacity (vph)		55	122		60	177	53	1510	1392	55		1650
Starvation Cap Reductn		0	0		0	0	0	0	0	0		86
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		0.25	0.49		0.13	0.07	0.08	0.36	0.00	0.31		0.82

## Intersection Summary












Area Type: Other  
 Cycle Length: 130  
 Actuated Cycle Length: 130  
 Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow, Master Intersection  
 Natural Cycle: 90  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.77  
 Intersection Signal Delay: 8.3  
 Intersection LOS: A  
 Intersection Capacity Utilization 87.3%  
 ICU Level of Service E  
 Analysis Period (min) 15  
 m Volume for 95th percentile queue is metered by upstream signal.

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



9: Lowell Road (Route 3A) & Pelham Road  
Lanes, Volumes, Timings

2019 Existing AM

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
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
Fr <sub>t</sub>		0.850	0.979			
Fl <sub>t</sub> Protected	0.950				0.950	
Satd. Flow (prot)	1787	802	1836	0	1719	1863
Fl <sub>t</sub> Permitted	0.950				0.950	
Satd. Flow (perm)	1787	802	1836	0	1719	1863
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		43	19			
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
Permitted Phases						
Detector Phase	4	4 5	6		5	2
Switch Phase						
Minimum Initial (s)	5.0		10.0		3.0	10.0
Minimum Split (s)	11.0		16.0		9.0	16.0
Total Split (s)	20.0		100.0		10.0	110.0
Total Split (%)	15.4%		76.9%		7.7%	84.6%
Maximum Green (s)	14.0		94.0		4.0	104.0
Yellow Time (s)	4.0		4.0		4.0	4.0
All-Red Time (s)	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
Recall Mode	None		C-Min		None	C-Min
Act Effct Green (s)	14.0	24.0	94.0		4.0	104.0
Actuated g/C Ratio	0.11	0.18	0.72		0.03	0.80
v/c Ratio	1.33	0.44	0.42		1.25	0.70
Control Delay	224.8	32.7	8.0		256.1	9.2
Queue Delay	0.0	0.0	0.3		0.0	0.3
Total Delay	224.8	32.7	8.2		256.1	9.4
LOS	F	C	A		F	A

# 9: Lowell Road (Route 3A) & Pelham Road Lanes, Volumes, Timings

2019 Existing AM

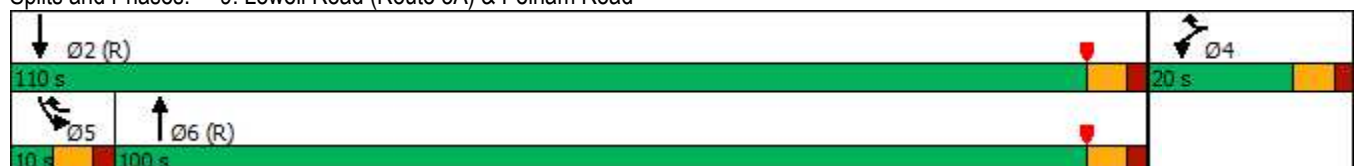


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Approach Delay	178.7		8.2			23.8
Approach LOS	F		A			C
Queue Length 50th (ft)	~280	28	219		~68	335
Queue Length 95th (ft)	#441	79	104		#167	467
Internal Link Dist (ft)	432		469			1229
Turn Bay Length (ft)		75			150	
Base Capacity (vph)	192	183	1332		52	1490
Starvation Cap Reductn	0	0	276		0	0
Spillback Cap Reductn	0	0	0		0	87
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	1.33	0.44	0.53		1.25	0.75

## Intersection Summary

Area Type:	Other
Cycle Length:	130
Actuated Cycle Length:	130
Offset:	30 (23%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow
Natural Cycle:	60
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.33
Intersection Signal Delay:	45.4
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.**

1: River Road (Route 3A)/Lowell Road (Route 3A) & Dracut Road & Steele Road  
 Lanes, Volumes, Timings

2019 ExistingPM

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	0.0	
Total Lost Time (s)	6.0	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

1: River Road (Route 3A)/Lowell Road (Route 3A) & Dracut Road & Steele Road  
Lanes, Volumes, Timings

2019 ExistingPM

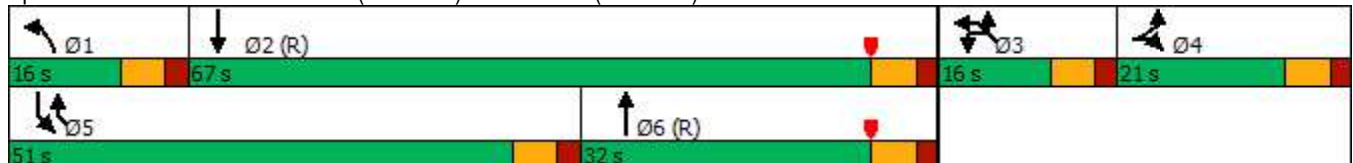


Lane Group	EBL	EBR	EBR2	NBL	NBT	NBR	SBL	SBT	SBR	NWL2	NWL	NWR
Approach Delay	53.7			55.4			92.0			13.2		
Approach LOS	D			E			F			B		
Queue Length 50th (ft)	33	0		1	238		~920	10			3	131
Queue Length 95th (ft)	62	0		7	307		#1166	58			15	283
Internal Link Dist (ft)	511			678			1653			542		
Turn Bay Length (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





2: Lowell Road (Route 3A) & Site Driveway/Rena Avenue  
Lanes, Volumes, Timings

2019 ExistingPM

												
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
Fr <sub>t</sub>			0.850		0.872			0.999			0.999	
Fl <sub>t</sub> Protected		0.950			0.998		0.950			0.950		
Satd. Flow (prot)	0	1668	1507	0	1709	0	1685	3606	0	1805	3605	0
Fl <sub>t</sub> 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	

## 2: Lowell Road (Route 3A) & Site Driveway/Rena Avenue Lanes, Volumes, Timings

2019 ExistingPM



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%

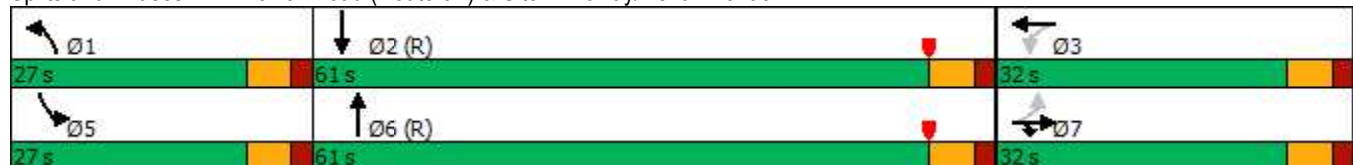
ICU Level of Service B

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



### 3: Lowell Road (Route 3A) & Sam's Club Driveway/Walmart Driveway Lanes, Volumes, Timings

2019 ExistingPM

												
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
Fr <sub>t</sub>			0.850			0.850			0.850			0.850
Fl <sub>t</sub> Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3502	1963	1615	3502	1900	1669	3467	3610	1615	3502	3574	1615
Fl <sub>t</sub> 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

### 3: Lowell Road (Route 3A) & Sam's Club Driveway/Walmart Driveway Lanes, Volumes, Timings

2019 ExistingPM

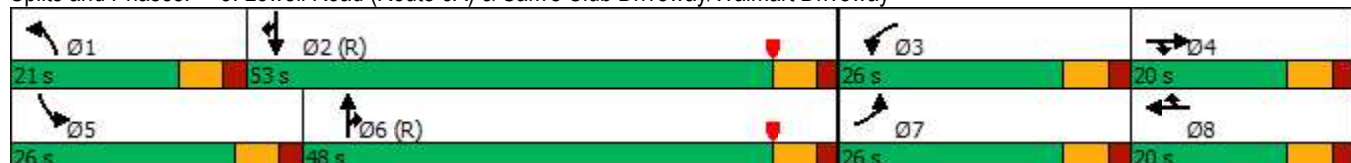


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		40.8			33.8			24.7			26.5	
Approach LOS		D			C			C			C	
Queue Length 50th (ft)	107	10	0	39	17	28	44	278	4	135	382	0
Queue Length 95th (ft)	144	29	44	63	41	101	75	#643	0	156	511	m22
Internal Link Dist (ft)		321			369			900			1109	
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



#### 4: Lowell Road (Route 3A) & Sagamore Bridge Road Lanes, Volumes, Timings

2019 ExistingPM



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	70.0	30.0	
Total Split (%)	41.7%		33.3%	58.3%	25.0%	
Maximum Green (s)	44.0		32.0	63.0	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

# 4: Lowell Road (Route 3A) & Sagamore Bridge Road Lanes, Volumes, Timings

2019 ExistingPM

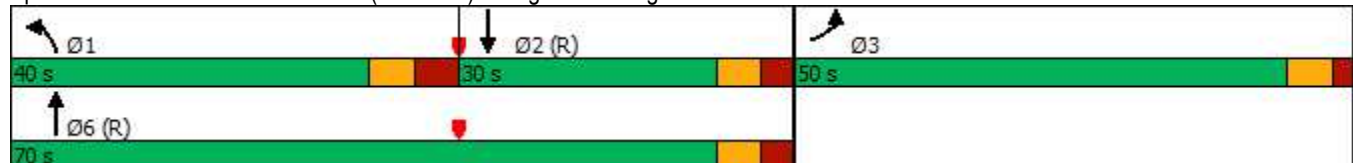


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Approach Delay	43.0			75.4	18.3	
Approach LOS	D			E	B	
Queue Length 50th (ft)	~665	0	~531	146	184	0
Queue Length 95th (ft)	#804	0	#644	113	240	0
Internal Link Dist (ft)	849			1109	919	
Turn Bay Length (ft)			525			200
Base Capacity (vph)	1407	1706	933	1895	691	1599
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



5: Lowell Road (Route 3A) & Flagstone Drive/Wason Road  
Lanes, Volumes, Timings

2019 ExistingPM

												
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	81.0	56.0	21.0	71.0	
Total Split (%)	14.1%	14.1%	16.8%	30.4%	30.4%	11.4%	16.8%	44.0%	30.4%	11.4%	38.6%	
Maximum Green (s)	20.0	20.0	25.0	50.0	50.0	15.0	25.0	75.0	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	

# 5: Lowell Road (Route 3A) & Flagstone Drive/Wason Road Lanes, Volumes, Timings

2019 ExistingPM

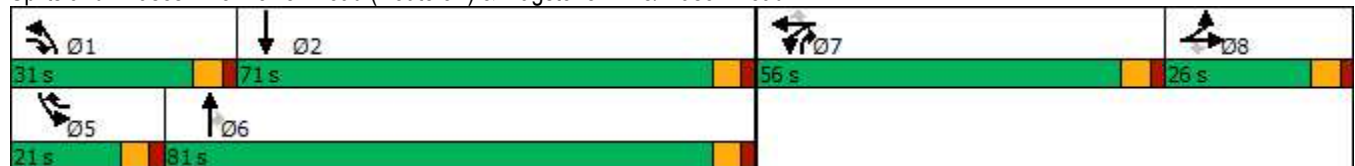


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		61.6			53.7			29.6				54.5
Approach LOS		E			D			C				D
Queue Length 50th (ft)		90	351	207	206	0	66	416	423	72		406
Queue Length 95th (ft)		165	#556	368	366	0	153	648	809	156		576
Internal Link Dist (ft)		725			506			919				1435
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



























# 6: Lowell Road (Route 3A) & Hampshire Drive/Oblate Drive

## Lanes, Volumes, Timings

2019 ExistingPM

												
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	

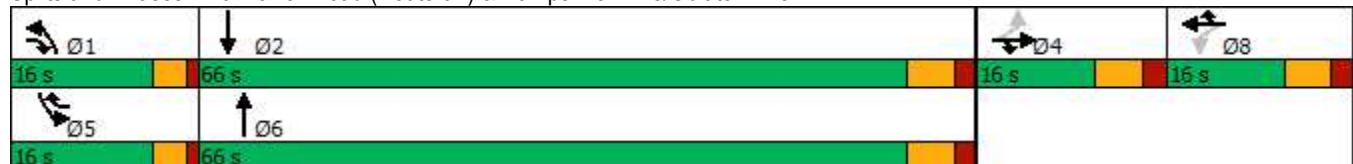
# 6: Lowell Road (Route 3A) & Hampshire Drive/Oblate Drive Lanes, Volumes, Timings

2019 ExistingPM

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



7: Lowell Road (Route 3A) & Executive Drive  
Lanes, Volumes, Timings

2019 ExistingPM

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		26.0	26.0	26.0	16.0	66.0		16.0	66.0	
Total Split (%)	24.1%	24.1%		24.1%	24.1%	24.1%	14.8%	61.1%		14.8%	61.1%	
Maximum Green (s)	20.0	20.0		20.0	20.0	20.0	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	

# 7: Lowell Road (Route 3A) & Executive Drive Lanes, Volumes, Timings

2019 ExistingPM

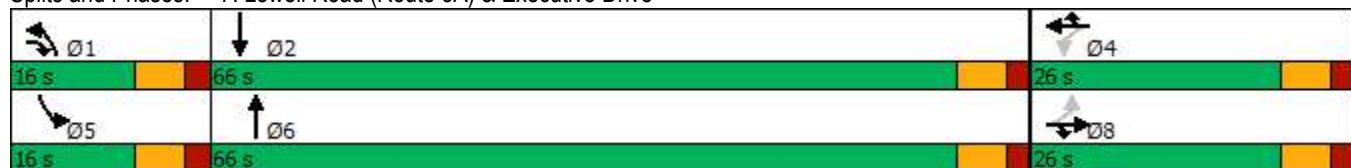


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		25.9			11.8			15.7				20.7
Approach LOS		C			B			B				C
Queue Length 50th (ft)		94	0		9	0	19	126		6		126
Queue Length 95th (ft)		#226	19		31	0	58	249		28		186
Internal Link Dist (ft)		412			497			1711				1088
Turn Bay Length (ft)			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



# 8: Lowell Road (Route 3A) & Fox Hollow Drive/Nottingham Square Driveway Lanes, Volumes, Timings

2019 ExistingPM



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							0.950			0.950		
Satd. Flow (perm)	0	1900	1583	0	1963	1669	1745	1818	1615	1805	1876	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			76			60			76			2
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)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	110.0	110.0	10.0	110.0	
Total Split (%)	7.7%	7.7%	7.7%	7.7%	7.7%	7.7%	7.7%	84.6%	84.6%	7.7%	84.6%	
Maximum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	104.0	104.0	4.0	104.0	
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	
Act Effct Green (s)		4.0	4.0		4.0	12.0	4.0	106.0	106.0	4.0	111.2	
Actuated g/C Ratio		0.03	0.03		0.03	0.09	0.03	0.82	0.82	0.03	0.86	
v/c Ratio		0.24	0.25		0.65	0.29	0.51	0.76	0.01	1.09	0.43	
Control Delay		71.6	5.0		106.0	16.4	93.3	10.6	0.0	199.3	3.4	
Queue Delay		0.0	0.0		0.0	0.2	0.0	21.7	0.0	0.0	0.2	
Total Delay		71.6	5.0		106.0	16.6	93.3	32.2	0.0	199.3	3.7	
LOS		E	A		F	B	F	C	A	F	A	

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

## Lanes, Volumes, Timings

2019 ExistingPM

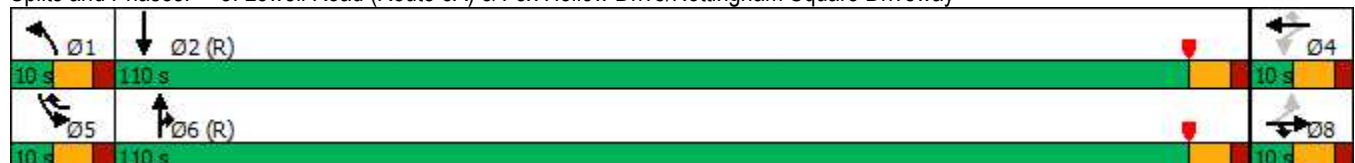


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		25.7			51.8			33.2				19.3
Approach LOS		C			D			C				B
Queue Length 50th (ft)		12	0		33	0	23	409	0	~57		125
Queue Length 95th (ft)		31	0		#77	33	#67	591	0	#154		165
Internal Link Dist (ft)		518			182			1325				469
Turn Bay Length (ft)			50			100	210		325	125		
Base Capacity (vph)		58	122		60	208	53	1482	1331	55		1605
Starvation Cap Reductn		0	0		0	0	0	0	0	0		318
Spillback Cap Reductn		0	0		0	12	0	390	0	0		0
Storage Cap Reductn		0	0		0	0	0	0	0	0		0
Reduced v/c Ratio		0.24	0.25		0.65	0.31	0.51	1.03	0.01	1.09		0.54

### Intersection Summary












Area Type: Other  
 Cycle Length: 130  
 Actuated Cycle Length: 130  
 Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow, Master Intersection  
 Natural Cycle: 80  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.09  
 Intersection Signal Delay: 28.9  
 Intersection LOS: C  
 Intersection Capacity Utilization 81.9%  
 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: 8: Lowell Road (Route 3A) & Fox Hollow Drive/Nottingham Square Driveway



9: Lowell Road (Route 3A) & Pelham Road  
Lanes, Volumes, Timings

2019 ExistingPM

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
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
Fr <sub>t</sub>		0.850	0.988			
Fl <sub>t</sub> Protected	0.950				0.950	
Satd. Flow (prot)	1805	850	1922	0	1805	1881
Fl <sub>t</sub> Permitted	0.950				0.950	
Satd. Flow (perm)	1805	850	1922	0	1805	1881
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		154	10			
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
Permitted Phases						
Detector Phase	4	4 5	6		5	2
Switch Phase						
Minimum Initial (s)	5.0		10.0		3.0	10.0
Minimum Split (s)	11.0		16.0		9.0	16.0
Total Split (s)	20.0		100.0		10.0	110.0
Total Split (%)	15.4%		76.9%		7.7%	84.6%
Maximum Green (s)	14.0		94.0		4.0	104.0
Yellow Time (s)	4.0		4.0		4.0	4.0
All-Red Time (s)	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
Recall Mode	None		C-Min		None	C-Min
Act Effct Green (s)	10.4	20.4	97.6		4.0	107.6
Actuated g/C Ratio	0.08	0.16	0.75		0.03	0.83
v/c Ratio	0.66	0.60	0.82		2.18	0.45
Control Delay	78.7	18.2	22.9		614.7	4.4
Queue Delay	0.0	0.0	18.3		0.0	0.0
Total Delay	78.7	18.2	41.2		614.7	4.4
LOS	E	B	D		F	A

# 9: Lowell Road (Route 3A) & Pelham Road Lanes, Volumes, Timings

2019 ExistingPM

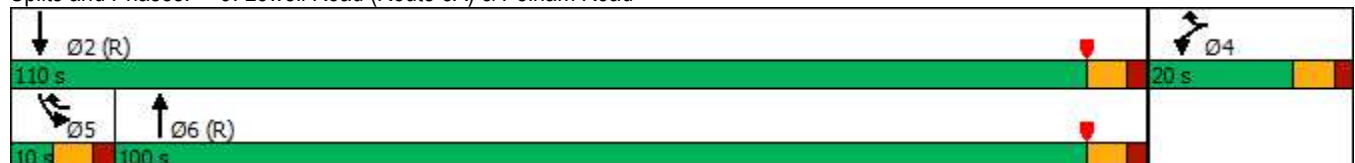


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Approach Delay	40.8		41.2			93.3
Approach LOS	D		D			F
Queue Length 50th (ft)	79	4	897		~162	131
Queue Length 95th (ft)	130	67	1171		#286	207
Internal Link Dist (ft)	432		469			1229
Turn Bay Length (ft)		75			150	
Base Capacity (vph)	194	254	1445		55	1556
Starvation Cap Reductn	0	0	285		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.49	0.63	1.02		2.18	0.45

## Intersection Summary

Area Type: Other  
 Cycle Length: 130  
 Actuated Cycle Length: 130  
 Offset: 30 (23%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow  
 Natural Cycle: 90  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 2.18  
 Intersection Signal Delay: 60.1  
 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 D**

### **Capacity Analysis – 2024 No-Build Traffic Conditions**

**2024 No-Build Weekday A.M.**

1: River Road (Route 3A)/Lowell Road (Route 3A) & Dracut Road & Steele Road  
Lanes, Volumes, Timings

2024 No-Build AM



Lane Group	EBL	EBR	EBR2	NBL	NBT	NBR	SBL	SBT	SBR	NWL	NWR
Lane Configurations											
Traffic Volume (vph)	2	0	2	0	273	0	475	515	13	1	832
Future Volume (vph)	2	0	2	0	273	0	475	515	13	1	832
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
Fr <sub>t</sub>		0.850						0.996			0.850
Fl <sub>t</sub> Protected	0.950						0.950			0.950	
Satd. Flow (prot)	1685	1133	0	1773	3574	0	1652	3561	0	1805	1583
Fl <sub>t</sub> 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)		541						3			492
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	0.90	0.90	0.90	0.90	0.90	0.90	0.92	0.92	0.92	0.90	0.90
Heavy Vehicles (%)	0%	0%	33%	0%	1%	0%	2%	1%	0%	0%	2%
Adj. Flow (vph)	2	0	2	0	303	0	516	560	14	1	924
Shared Lane Traffic (%)											
Lane Group Flow (vph)	2	2	0	0	303	0	516	574	0	1	924
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)	5.7	5.7			21.6		36.5	64.1		11.5	52.8
Actuated g/C Ratio	0.06	0.06			0.24		0.41	0.71		0.13	0.59
v/c Ratio	0.02	0.00			0.35		0.77	0.23		0.00	0.82
Control Delay	40.0	0.0			31.6		39.9	3.6		36.0	13.7
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0
Total Delay	40.0	0.0			31.6		39.9	3.6		36.0	13.7
LOS	D	A			C		D	A		D	B

1: River Road (Route 3A)/Lowell Road (Route 3A) & Dracut Road & Steele Road  
Lanes, Volumes, Timings

2024 No-Build AM

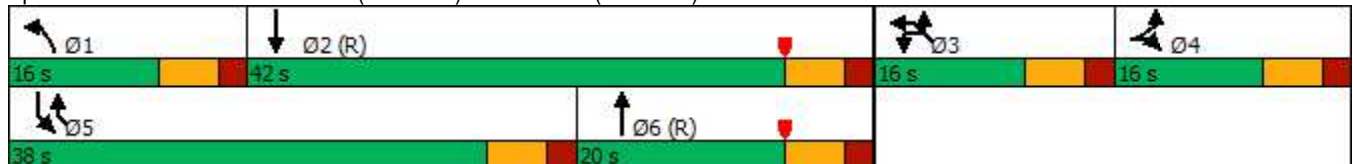


Lane Group	EBL	EBR	EBR2	NBL	NBT	NBR	SBL	SBT	SBR	NWL	NWR
Approach Delay	20.0			31.6			20.8			13.7	
Approach LOS	B			C			C			B	
Queue Length 50th (ft)	1	0		73			317	122		1	164
Queue Length 95th (ft)	8	0		126			#390	2		5	#369
Internal Link Dist (ft)	511			678			1653			542	
Turn Bay Length (ft)	50						775			100	
Base Capacity (vph)	187	606		856			682	2535		230	1140
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	0.01	0.00		0.35			0.76	0.23		0.00	0.81

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:	0.82
Intersection Signal Delay:	19.4
Intersection LOS:	B
Intersection Capacity Utilization:	69.1%
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



## 2: Lowell Road (Route 3A) & Site Driveway/Rena Avenue Lanes, Volumes, Timings

2024 No-Build AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	0	2	1	1	34	16	1138	2	7	1004	54
Future Volume (vph)	3	0	2	1	1	34	16	1138	2	7	1004	54
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	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.95	0.95	0.95
Heavy Vehicles (%)	0%	0%	33%	9%	0%	3%	0%	2%	20%	15%	2%	0%
Adj. Flow (vph)	3	0	2	1	1	38	18	1264	2	7	1057	57
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	3	2	0	40	0	18	1266	0	7	1114	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	0.01		0.24		0.13	0.43		0.06	0.39	
Control Delay		37.7	0.0		17.2		40.1	3.9		24.1	12.0	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		37.7	0.0		17.2		40.1	3.9		24.1	12.0	
LOS		D	A		B		D	A		C	B	

## 2: Lowell Road (Route 3A) & Site Driveway/Rena Avenue Lanes, Volumes, Timings

2024 No-Build AM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		22.6			17.2			4.4				12.1
Approach LOS		C			B			A				B
Queue Length 50th (ft)		2	0		1		9	101		3		262
Queue Length 95th (ft)		10	0		31		m15	208		m10		192
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		0.01	0.01		0.13		0.06	0.43		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: 0.43

Intersection Signal Delay: 8.1

Intersection LOS: A

Intersection Capacity Utilization 52.8%

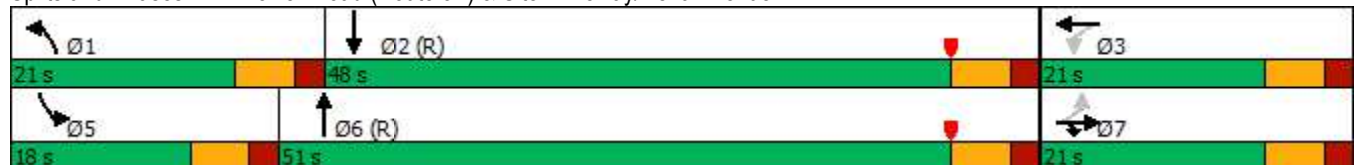
ICU Level of Service A

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



### 3: Lowell Road (Route 3A) & Sam's Club Driveway/Walmart Driveway Lanes, Volumes, Timings

2024 No-Build AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 		 	 		 	 	 	 	 	 	 
Traffic Volume (vph)	106	4	58	16	5	75	65	1088	28	89	983	66
Future Volume (vph)	106	4	58	16	5	75	65	1088	28	89	983	66
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
Fr <sub>t</sub>			0.850			0.850			0.850			0.850
Fl <sub>t</sub> Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3467	1852	1568	3502	1900	1589	3467	3539	1583	3433	3574	1583
Fl <sub>t</sub> 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	0.90	0.90	0.90	0.90	0.90	0.90	0.96	0.96	0.96
Heavy Vehicles (%)	1%	6%	3%	0%	0%	5%	1%	2%	2%	2%	1%	2%
Adj. Flow (vph)	114	4	62	18	6	83	72	1209	31	93	1024	69
Shared Lane Traffic (%)												
Lane Group Flow (vph)	114	4	62	18	6	83	72	1209	31	93	1024	69
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)	9.2	14.1	14.1	7.0	6.9	6.9	8.2	50.0	50.0	8.8	50.5	50.5
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	0.32	0.01	0.16	0.07	0.04	0.29	0.23	0.61	0.03	0.28	0.51	0.07
Control Delay	39.6	34.2	0.8	38.8	38.8	2.5	42.6	14.3	0.1	49.0	15.8	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	39.6	34.2	0.8	38.8	38.8	2.5	42.6	14.3	0.1	49.0	15.8	0.3
LOS	D	C	A	D	D	A	D	B	A	D	B	A

### 3: Lowell Road (Route 3A) & Sam's Club Driveway/Walmart Driveway Lanes, Volumes, Timings

2024 No-Build AM

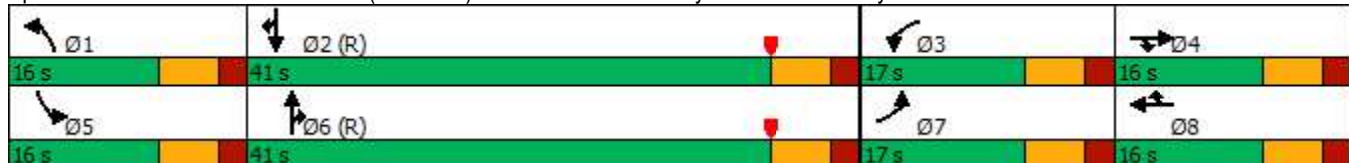


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		26.1			10.6			15.5			17.5	
Approach LOS		C			B			B			B	
Queue Length 50th (ft)	31	2	0	5	3	0	19	254	0	26	263	1
Queue Length 95th (ft)	56	12	0	15	15	0	46	89	m0	m47	348	m1
Internal Link Dist (ft)		321			369			900			1109	
Turn Bay Length (ft)	175		175	150		200	350		175	350		
Base Capacity (vph)	423	304	409	428	211	338	385	1967	960	386	2006	968
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	0.27	0.01	0.15	0.04	0.03	0.25	0.19	0.61	0.03	0.24	0.51	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: 0.61  
 Intersection Signal Delay: 16.8  
 Intersection LOS: B  
 Intersection Capacity Utilization 57.8%  
 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





#### 4: Lowell Road (Route 3A) & Sagamore Bridge Road Lanes, Volumes, Timings

2024 No-Build AM



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	993	871	905	350	344	1557
Future Volume (vph)	993	871	905	350	344	1557
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
Fr <sub>t</sub>		0.850				0.850
Fl <sub>t</sub> Protected	0.950		0.950			
Satd. Flow (prot)	3662	1689	3467	3539	3539	2760
Fl <sub>t</sub> Permitted	0.950		0.950			
Satd. Flow (perm)	3662	1689	3467	3539	3539	2760
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		750				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)	1056	927	984	380	374	1692
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1056	927	984	380	374	1692
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)	29.8	90.0	23.3	47.2	15.9	90.0
Actuated g/C Ratio	0.33	1.00	0.26	0.52	0.18	1.00
v/c Ratio	0.87	0.55	1.09	0.20	0.60	0.61
Control Delay	38.7	1.3	83.6	3.2	37.9	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.7	1.3	83.6	3.2	37.9	1.0
LOS	D	A	F	A	D	A

# 4: Lowell Road (Route 3A) & Sagamore Bridge Road Lanes, Volumes, Timings

2024 No-Build AM

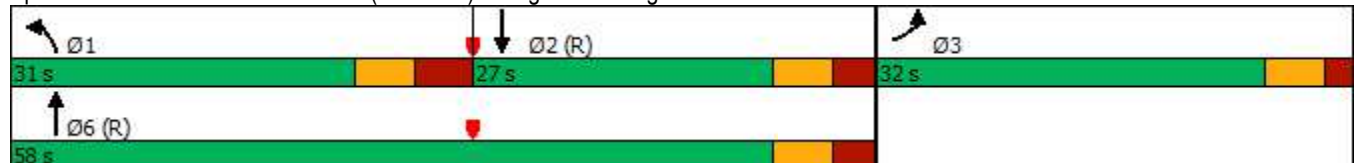


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Approach Delay	21.2			61.2	7.7	
Approach LOS	C			E	A	
Queue Length 50th (ft)	285	0	~312	7	104	0
Queue Length 95th (ft)	#447	0	#439	4	142	0
Internal Link Dist (ft)	849			1109	919	
Turn Bay Length (ft)			525			200
Base Capacity (vph)	1211	1689	899	2005	786	2760
Starvation 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	0.87	0.55	1.09	0.19	0.48	0.61

## 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:	1.09
Intersection Signal Delay:	26.1
Intersection LOS:	C
Intersection Capacity Utilization:	80.3%
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



5: Lowell Road (Route 3A) & Flagstone Drive/Wason Road  
Lanes, Volumes, Timings

2024 No-Build AM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	63	28	287	626	42	30	322	812	192	16	1070	10
Future Volume (vph)	63	28	287	626	42	30	322	812	192	16	1070	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		0.967		0.950	0.958		0.950			0.950		
Satd. Flow (prot)	0	1837	1583	1641	1657	1501	1787	3539	1583	1752	5078	0
Flt Permitted		0.967		0.950	0.958		0.950			0.950		
Satd. Flow (perm)	0	1837	1583	1641	1657	1501	1787	3539	1583	1752	5078	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			53			89			202			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	0.90	0.90	0.90	0.94	0.94	0.94	0.95	0.95	0.95	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	2%	1%	0%	4%	1%	2%	2%	3%	2%	6%
Adj. Flow (vph)	70	31	319	666	45	32	339	855	202	18	1189	11
Shared Lane Traffic (%)				47%								
Lane Group Flow (vph)	0	101	319	353	358	32	339	855	202	18	1200	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)		13.4	45.2	38.8	38.8	45.5	25.7	68.5	113.4	6.7	46.7	
Actuated g/C Ratio		0.09	0.30	0.26	0.26	0.30	0.17	0.46	0.76	0.04	0.31	
v/c Ratio		0.61	0.62	0.83	0.83	0.06	1.10	0.53	0.16	0.23	0.76	
Control Delay		85.6	45.7	70.4	70.6	0.2	137.8	32.8	1.0	84.1	50.1	
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay		85.6	45.7	70.4	70.6	0.2	137.8	32.8	1.0	84.1	50.1	
LOS		F	D	E	E	A	F	C	A	F	D	

# 5: Lowell Road (Route 3A) & Flagstone Drive/Wason Road Lanes, Volumes, Timings

2024 No-Build AM

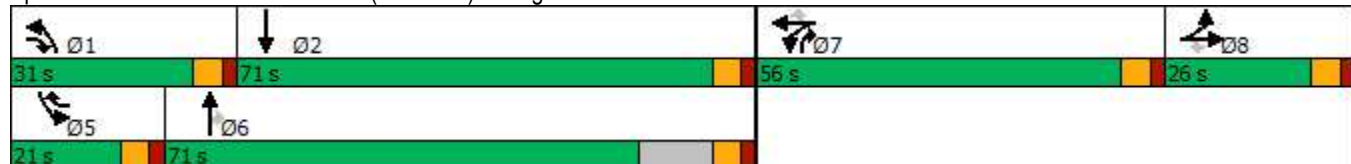


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay	55.3			67.4			53.7			50.6		
Approach LOS	E			E			D			D		
Queue Length 50th (ft)	97	228	341	346	0	~386	323	0	17	387		
Queue Length 95th (ft)	186	403	550	556	0	#744	470	22	52	506		
Internal Link Dist (ft)	725			506			919			1435		
Turn Bay Length (ft)	250			200			75			275		
Base Capacity (vph)	252	516	564	569	601	307	1834	1354	180	2271		
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	0.40	0.62	0.63	0.63	0.05	1.10	0.47	0.15	0.10	0.53		

## Intersection Summary























Area Type:	Other
Cycle Length:	184
Actuated Cycle Length:	149.2
Natural Cycle:	90
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	1.10
Intersection Signal Delay:	55.6
Intersection LOS:	E
Intersection Capacity Utilization:	78.8%
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



6: Lowell Road (Route 3A) & Hampshire Drive/Oblate Drive  
Lanes, Volumes, Timings

2024 No-Build AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	0	12	2	2	4	124	773	2	2	1132	60
Future Volume (vph)	8	0	12	2	2	4	124	773	2	2	1132	60
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	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	0%	11%	0%	0%	0%	3%	3%	0%	0%	3%	3%
Adj. Flow (vph)	9	0	13	2	2	4	138	859	2	2	1258	67
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	9	13	0	4	4	138	861	0	2	1325	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)		7.3	12.2		6.4	7.5	10.7	59.1		5.1	40.2	
Actuated g/C Ratio		0.11	0.18		0.09	0.11	0.16	0.87		0.08	0.59	
v/c Ratio		0.05	0.04		0.02	0.02	0.50	0.28		0.02	0.64	
Control Delay		38.2	0.2		41.2	0.0	39.4	4.2		42.5	12.8	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		38.2	0.2		41.2	0.0	39.4	4.2		42.5	12.8	
LOS		D	A		D	A	D	A		D	B	

# 6: Lowell Road (Route 3A) & Hampshire Drive/Oblate Drive Lanes, Volumes, Timings

2024 No-Build AM

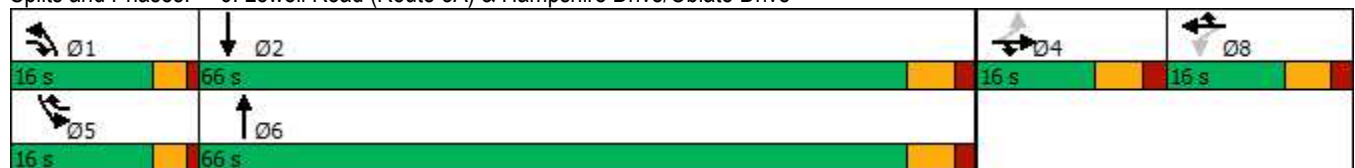


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		15.8			20.6			9.1				12.8
Approach LOS		B			C			A				B
Queue Length 50th (ft)		2	0		1	0	35	0		1		112
Queue Length 95th (ft)		22	0		14	0	#190	199		10		428
Internal Link Dist (ft)		415			302			1435				1711
Turn Bay Length (ft)			100			100	225			225		
Base Capacity (vph)		296	369		321	374	344	3058		342		2992
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		0.03	0.04		0.01	0.01	0.40	0.28		0.01		0.44

## Intersection Summary























Area Type: Other  
 Cycle Length: 114  
 Actuated Cycle Length: 67.9  
 Natural Cycle: 60  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.64  
 Intersection Signal Delay: 11.3  
 Intersection LOS: B  
 Intersection Capacity Utilization 60.1%  
 ICU Level of Service B  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

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



# 7: Lowell Road (Route 3A) & Executive Drive Lanes, Volumes, Timings

2024 No-Build AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	39	2	15	148	32	106	179	431	63	112	1029	207
Future Volume (vph)	39	2	15	148	32	106	179	431	63	112	1029	207
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		0.954			0.961		0.950			0.950		
Satd. Flow (prot)	0	1572	1558	0	1811	1620	1711	3409	0	1728	3451	0
Flt Permitted		0.493			0.734		0.950			0.950		
Satd. Flow (perm)	0	812	1558	0	1383	1620	1711	3409	0	1728	3451	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			30			101		24			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	0.90	0.90	0.90	0.90	0.90	0.90	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)	43	2	17	164	36	118	197	474	69	123	1131	227
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	45	17	0	200	118	197	543	0	123	1358	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)		11.9	25.4		15.1	15.1	10.2	45.2		9.4	44.3	
Actuated g/C Ratio		0.14	0.29		0.17	0.17	0.12	0.51		0.11	0.50	
v/c Ratio		0.41	0.04		0.84	0.33	0.99	0.31		0.67	0.77	
Control Delay		48.3	4.7		68.0	13.3	106.7	12.2		60.3	20.5	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		48.3	4.7		68.0	13.3	106.7	12.2		60.3	20.5	
LOS		D	A		E	B	F	B		E	C	

# 7: Lowell Road (Route 3A) & Executive Drive Lanes, Volumes, Timings

2024 No-Build AM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		36.3			47.7			37.4				23.8
Approach LOS		D			D			D				C
Queue Length 50th (ft)		22	0		108	8	~121	87		68		310
Queue Length 95th (ft)		64	10		#267	61	#305	118		#175		387
Internal Link Dist (ft)		412			497			1711				1088
Turn Bay Length (ft)			225			80	350			150		
Base Capacity (vph)		188	545		321	453	198	2382		200		2415
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	0.03		0.62	0.26	0.99	0.23		0.61		0.56

## Intersection Summary

Area Type:	Other
Cycle Length:	108
Actuated Cycle Length:	88.1
Natural Cycle:	75
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.99
Intersection Signal Delay:	30.9
Intersection LOS:	C
Intersection Capacity Utilization	76.5%
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: 7: Lowell Road (Route 3A) & Executive Drive





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

## Lanes, Volumes, Timings

2024 No-Build AM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕	↗	↗	↑	↗	↗	↘	↘
Traffic Volume (vph)	12	0	50	6	0	11	4	547	1	17	1298	3
Future Volume (vph)	12	0	50	6	0	11	4	547	1	17	1298	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		0.769			0.769		0.950			0.950		
Satd. Flow (perm)	0	1392	1583	0	1510	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	0.90	0.90	0.90	0.90	0.90	0.90	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)	13	0	56	7	0	12	4	601	1	18	1366	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	13	56	0	7	12	4	601	1	18	1369	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)		6.2	6.2		6.2	16.1	5.0	151.1	151.1	6.1	156.6	
Actuated g/C Ratio		0.03	0.03		0.03	0.09	0.03	0.84	0.84	0.03	0.87	
v/c Ratio		0.28	0.39		0.14	0.06	0.08	0.41	0.00	0.30	0.84	
Control Delay		98.4	10.4		89.2	0.5	89.0	7.9	0.0	96.5	16.5	

# 8: Lowell Road (Route 3A) & Fox Hollow Drive/Nottingham Square Driveway Lanes, Volumes, Timings

2024 No-Build AM

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	

# 8: Lowell Road (Route 3A) & Fox Hollow Drive/Nottingham Square Driveway Lanes, Volumes, Timings

2024 No-Build AM

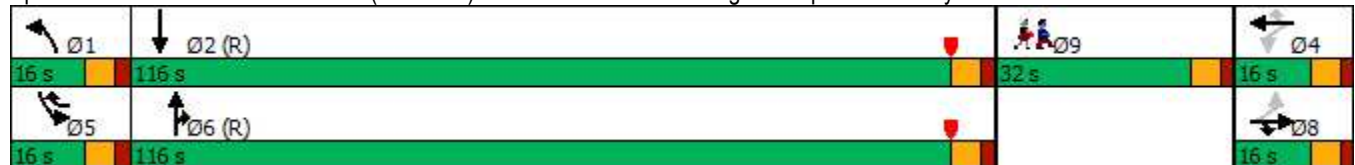


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	16.4	
Total Delay		98.4	10.4		89.2	0.5	89.0	7.9	0.0	96.5	32.9	
LOS		F	B		F	A	F	A	A	F	C	
Approach Delay		27.0			33.2			8.5			33.8	
Approach LOS		C			C			A			C	
Queue Length 50th (ft)		15	0		8	0	5	148	0	21	422	
Queue Length 95th (ft)		42	10		27	0	20	491	0	52	#2136	
Internal Link Dist (ft)		518			182			1325			469	
Turn Bay Length (ft)			50			100	210		325	125		
Base Capacity (vph)		77	173		83	233	96	1482	1370	100	1621	
Starvation Cap Reductn		0	0		0	0	0	0	0	0	276	
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		0.17	0.32		0.08	0.05	0.04	0.41	0.00	0.18	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: 0.84  
 Intersection Signal Delay: 26.2  
 Intersection LOS: C  
 Intersection Capacity Utilization 91.8%  
 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



# 8: Lowell Road (Route 3A) & Fox Hollow Drive/Nottingham Square Driveway Lanes, Volumes, Timings

2024 No-Build AM












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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	

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9: Lowell Road (Route 3A) & Pelham Road  
Lanes, Volumes, Timings

2024 No-Build AM

							
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø9
Lane Configurations							
Traffic Volume (vph)	236	75	479	86	65	1084	
Future Volume (vph)	236	75	479	86	65	1084	
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	
Fr <sub>t</sub>		0.850	0.980				
Fl <sub>t</sub> Protected	0.950				0.950		
Satd. Flow (prot)	1787	802	1838	0	1719	1863	
Fl <sub>t</sub> 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	0.90	0.90	0.92	0.92	0.96	0.96	
Heavy Vehicles (%)	1%	6%	5%	3%	5%	2%	
Adj. Flow (vph)	262	83	521	93	68	1129	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	262	83	614	0	68	1129	
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	1.39	0.51	0.46		1.08	0.76	
Control Delay	261.9	57.8	13.8		214.6	17.2	

# 9: Lowell Road (Route 3A) & Pelham Road Lanes, Volumes, Timings

2024 No-Build AM

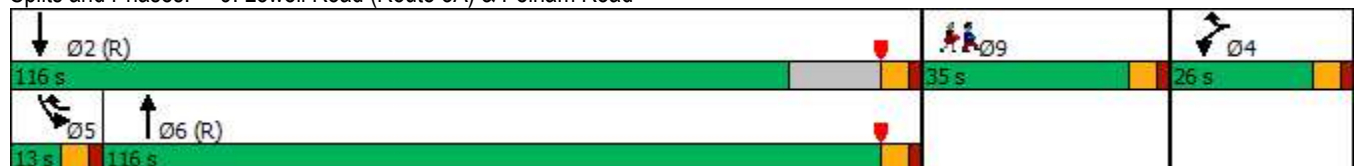


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø9
Queue Delay	0.0	0.0	3.6		0.0	0.0	
Total Delay	261.9	57.8	17.4		214.6	17.2	
LOS	F	E	B		F	B	
Approach Delay	212.8		17.4			28.4	
Approach LOS	F		B			C	
Queue Length 50th (ft)	~434	62	246		~94	519	
Queue Length 95th (ft)	#636	129	590		#213	#1628	
Internal Link Dist (ft)	432		469			1229	
Turn Bay Length (ft)		75			150		
Base Capacity (vph)	188	163	1337		63	1480	
Starvation Cap Reductn	0	0	613		0	0	
Spillback Cap Reductn	0	0	0		0	0	
Storage Cap Reductn	0	0	0		0	0	
Reduced v/c Ratio	1.39	0.51	0.85		1.08	0.76	

## 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: 1.39  
 Intersection Signal Delay: 54.8  
 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: 9: Lowell Road (Route 3A) & Pelham Road



**2024 No-Build Weekday P.M.**

1: River Road (Route 3A)/Lowell Road (Route 3A) & Dracut Road & Steele Road  
Lanes, Volumes, Timings

2024 No-Build PM

Lane Group	EBL	EBR	EBR2	NBL	NBT	NBR	SBL	SBT	SBR	NWL2	NWL	NWR
Lane Configurations												
Traffic Volume (vph)	37	2	2	1	604	1	873	400	14	4	0	636
Future Volume (vph)	37	2	2	1	604	1	873	400	14	4	0	636
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
Fr <sub>t</sub>		0.850						0.995				0.850
Fl <sub>t</sub> Protected	0.950			0.950			0.950				0.950	
Satd. Flow (prot)	1668	1507	0	1685	3610	0	1685	3558	0	0	1805	1615
Fl <sub>t</sub> 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				273
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	0.90	0.90	0.90	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)	41	2	2	1	664	1	970	444	16	4	0	699
Shared Lane Traffic (%)												
Lane Group Flow (vph)	41	4	0	1	665	0	970	460	0	0	4	699
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Right	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)	10				10			20				12
Link Offset(ft)	0				0			0				0
Crosswalk Width(ft)	16				16			16				16
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.09	1.00	1.00	1.09	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	9	15		9	15		9	15	15	9
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	



1: River Road (Route 3A)/Lowell Road (Route 3A) & Dracut Road & Steele Road  
Lanes, Volumes, Timings

2024 No-Build PM

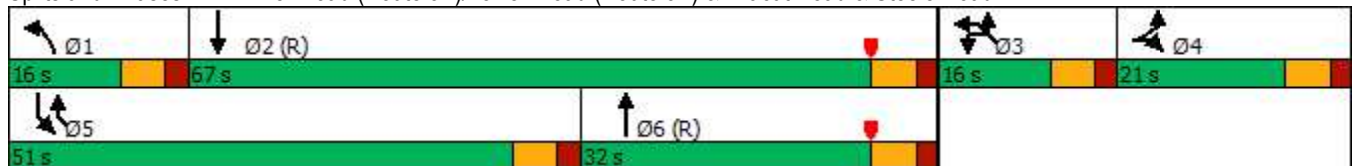


Lane Group	EBL	EBR	EBR2	NBL	NBT	NBR	SBL	SBT	SBR	NWL2	NWL	NWR
Recall Mode	None	None		None	C-Min		None	C-Min		None	None	
Act Effct Green (s)	8.4	8.4		5.6	25.5		53.9	83.0			10.5	65.6
Actuated g/C Ratio	0.07	0.07		0.05	0.21		0.45	0.69			0.09	0.55
v/c Ratio	0.35	0.01		0.01	0.87		1.28	0.19			0.03	0.69
Control Delay	60.7	0.0		55.0	58.5		159.6	4.2			51.0	14.5
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Total Delay	60.7	0.0		55.0	58.5		159.6	4.2			51.0	14.5
LOS	E	A		D	E		F	A			D	B
Approach Delay	55.3				58.5			109.6			14.7	
Approach LOS	E				E			F			B	
Queue Length 50th (ft)	31	0		1	262		~967	24			3	147
Queue Length 95th (ft)	67	0		7	#352		#1245	72			15	324
Internal Link Dist (ft)	511				678			1653			542	
Turn Bay Length (ft)		50		200			775				100	
Base Capacity (vph)	208	355		140	782		756	2462			158	1006
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	0.20	0.01		0.01	0.85		1.28	0.19			0.03	0.69

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: 1.28  
 Intersection Signal Delay: 73.3      Intersection LOS: E  
 Intersection Capacity Utilization 93.4%      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



2: Lowell Road (Route 3A) & Site Driveway/Rena Avenue  
Lanes, Volumes, Timings

2024 No-Build PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	53	0	18	1	0	16	2	1279	5	24	1260	6
Future Volume (vph)	53	0	18	1	0	16	2	1279	5	24	1260	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			0.997		0.950			0.950		
Satd. Flow (prot)	0	1668	1507	0	1707	0	1685	3606	0	1805	3605	0
Flt Permitted		0.745			0.984		0.950			0.950		
Satd. Flow (perm)	0	1308	1507	0	1685	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	0.90	0.90	0.90	0.90	0.90	0.90	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)	59	0	20	1	0	18	2	1375	5	27	1400	7
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	59	20	0	19	0	2	1380	0	27	1407	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			18			18	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	0.96	0.96	0.96	1.09	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
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	

## 2: Lowell Road (Route 3A) & Site Driveway/Rena Avenue Lanes, Volumes, Timings

2024 No-Build PM

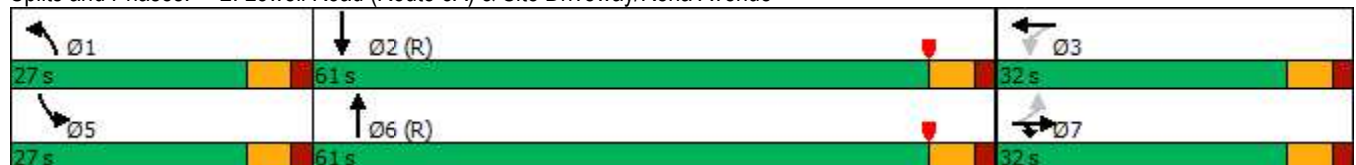


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Recall Mode	None	None	None	None	None		None	C-Min		None	C-Min	
Act Effct Green (s)		11.7	11.7		10.0		6.8	90.9		8.3	97.4	
Actuated g/C Ratio		0.10	0.10		0.08		0.06	0.76		0.07	0.81	
v/c Ratio		0.46	0.09		0.09		0.02	0.51		0.22	0.48	
Control Delay		61.8	0.8		0.8		64.0	7.0		47.2	4.1	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		61.8	0.8		0.8		64.0	7.0		47.2	4.1	
LOS		E	A		A		E	A		D	A	
Approach Delay		46.4			0.8			7.1			4.9	
Approach LOS		D			A			A			A	
Queue Length 50th (ft)		44	0		0		1	152		20	73	
Queue Length 95th (ft)		85	0		0		m1	240		m36	186	
Internal Link Dist (ft)		430			477			1653			900	
Turn Bay Length (ft)			50				300			350		
Base Capacity (vph)		283	390		429		294	2730		315	2926	
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		0.04		0.01	0.51		0.09	0.48	

### 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: 0.51  
 Intersection Signal Delay: 7.0  
 Intersection LOS: A  
 Intersection Capacity Utilization 58.4%  
 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



### 3: Lowell Road (Route 3A) & Sam's Club Driveway/Walmart Driveway Lanes, Volumes, Timings

2024 No-Build PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	261	14	119	92	21	256	100	1182	78	326	1092	207
Future Volume (vph)	261	14	119	92	21	256	100	1182	78	326	1092	207
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
Fr <sub>t</sub>			0.850			0.850			0.850			0.850
Fl <sub>t</sub> Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3502	1963	1615	3502	1900	1669	3467	3610	1615	3502	3574	1615
Fl <sub>t</sub> 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			244			136			195
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	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.91	0.91	0.91
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	1%	0%
Adj. Flow (vph)	290	16	132	102	23	284	111	1313	87	358	1200	227
Shared Lane Traffic (%)												
Lane Group Flow (vph)	290	16	132	102	23	284	111	1313	87	358	1200	227
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		34			32			34			34	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	0.96	1.00	1.00	1.00	0.96	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
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

### 3: Lowell Road (Route 3A) & Sam's Club Driveway/Walmart Driveway Lanes, Volumes, Timings

2024 No-Build PM

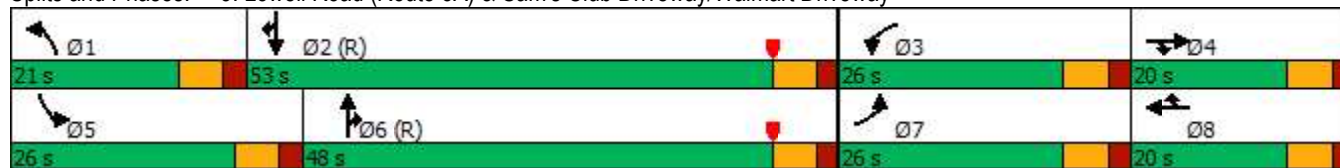


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Recall Mode	None	None	None	None	None	None	None	C-Min	C-Min	None	C-Min	C-Min
Act Effect Green (s)	16.1	16.4	16.4	9.8	10.2	10.2	10.2	52.0	52.0	17.8	59.6	59.6
Actuated g/C Ratio	0.13	0.14	0.14	0.08	0.08	0.08	0.08	0.43	0.43	0.15	0.50	0.50
v/c Ratio	0.62	0.06	0.39	0.36	0.14	0.78	0.38	0.84	0.11	0.69	0.68	0.25
Control Delay	54.7	42.8	10.2	55.1	51.0	25.6	70.0	25.1	0.6	61.7	21.8	1.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.7	42.8	10.2	55.1	51.0	25.6	70.0	25.1	0.6	61.7	21.8	1.6
LOS	D	D	B	E	D	C	E	C	A	E	C	A
Approach Delay	40.8			34.4			27.0			27.2		
Approach LOS	D			C			C			C		
Queue Length 50th (ft)	110	11	0	39	17	30	47	288	3	141	420	0
Queue Length 95th (ft)	151	31	51	67	42	121	78	#697	0	164	550	m24
Internal Link Dist (ft)	321			369			900			1109		
Turn Bay Length (ft)	175		175	150		200	350		175	350		
Base Capacity (vph)	583	282	348	583	221	410	433	1563	776	584	1773	899
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	0.50	0.06	0.38	0.17	0.10	0.69	0.26	0.84	0.11	0.61	0.68	0.25

#### 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: 80  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.84  
 Intersection Signal Delay: 29.3  
 Intersection LOS: C  
 Intersection Capacity Utilization 71.1%  
 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



#### 4: Lowell Road (Route 3A) & Sagamore Bridge Road Lanes, Volumes, Timings

2024 No-Build PM


























Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖↖	↗	↖↖	↑↑	↑↑	↖↖
Traffic Volume (vph)	1521	1222	1077	642	458	1285
Future Volume (vph)	1521	1222	1077	642	458	1285
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
Fr <sub>t</sub>		0.850				0.850
Fl <sub>t</sub> Protected	0.950		0.950			
Satd. Flow (prot)	3698	1706	3502	3610	3610	2814
Fl <sub>t</sub> Permitted	0.950		0.950			
Satd. Flow (perm)	3698	1706	3502	3610	3610	2814
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		515				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	0.90	0.90
Heavy Vehicles (%)	1%	1%	0%	0%	0%	1%
Adj. Flow (vph)	1584	1273	1146	683	509	1428
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1584	1273	1146	683	509	1428
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	28			34	24	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	0.92	0.92	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
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	



# 5: Lowell Road (Route 3A) & Flagstone Drive/Wason Road Lanes, Volumes, Timings

2024 No-Build PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	52	93	441	443	18	28	146	1031	1008	74	891	5
Future Volume (vph)	52	93	441	443	18	28	146	1031	1008	74	891	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			308			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	0.90	0.90	0.90	0.90	0.90	0.90	0.94	0.94	0.94	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	1%	0%	0%	1%	1%	1%	0%	0%	1%	0%
Adj. Flow (vph)	58	103	490	492	20	31	155	1097	1072	82	990	6
Shared Lane Traffic (%)				48%								
Lane Group Flow (vph)	0	161	490	256	256	31	155	1097	1072	82	996	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			18			20			20	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.04	1.04	1.04	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
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	



# 5: Lowell Road (Route 3A) & Flagstone Drive/Wason Road Lanes, Volumes, Timings

2024 No-Build PM

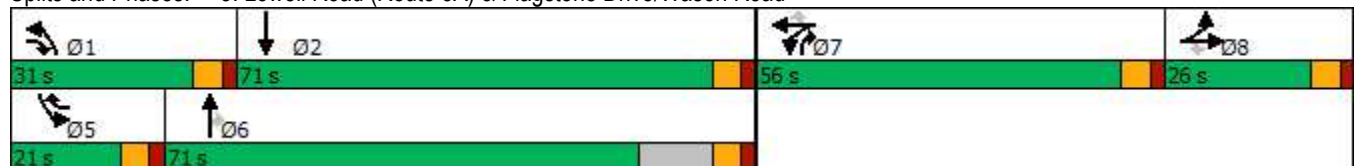


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Recall Mode	None	None	None	None	None	None	None	Min	None	None	Min	
Act Effct Green (s)		17.4	49.4	41.7	41.7	53.3	25.8	56.2	104.1	11.6	42.1	
Actuated g/C Ratio		0.11	0.33	0.27	0.27	0.35	0.17	0.37	0.69	0.08	0.28	
v/c Ratio		0.76	0.88	0.56	0.56	0.05	0.51	0.83	0.89	0.59	0.70	
Control Delay		90.4	62.8	53.6	53.5	0.2	69.7	51.4	24.2	90.9	52.3	
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	0.0	0.0	
Total Delay		90.4	62.8	53.6	53.5	0.2	69.7	51.4	26.0	90.9	52.3	
LOS		F	E	D	D	A	E	D	C	F	D	
Approach Delay		69.6			50.5			40.9			55.2	
Approach LOS		E			D			D			E	
Queue Length 50th (ft)		168	458	236	236	0	156	578	658	86	354	
Queue Length 95th (ft)		#290	#746	366	366	0	253	690	1028	155	406	
Internal Link Dist (ft)		725			506			919			1435	
Turn Bay Length (ft)			250	200		75	575		275	175		
Base Capacity (vph)		253	558	563	567	638	303	1822	1290	183	2268	
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		0.64	0.88	0.45	0.45	0.05	0.51	0.60	0.90	0.45	0.44	

## Intersection Summary























Area Type: Other  
 Cycle Length: 184  
 Actuated Cycle Length: 151.7  
 Natural Cycle: 90  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.89  
 Intersection Signal Delay: 49.5  
 Intersection LOS: D  
 Intersection Capacity Utilization 89.4%  
 ICU Level of Service E  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

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



6: Lowell Road (Route 3A) & Hampshire Drive/Oblate Drive  
Lanes, Volumes, Timings

2024 No-Build PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	2	107	11	1	4	18	1092	13	5	865	7
Future Volume (vph)	26	2	107	11	1	4	18	1092	13	5	865	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		0.955			0.956		0.950			0.950		
Satd. Flow (prot)	0	1814	1583	0	1877	1669	1736	3568	0	1745	3571	0
Flt Permitted		0.466					0.950			0.950		
Satd. Flow (perm)	0	885	1583	0	1963	1669	1736	3568	0	1745	3571	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			119			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	0.90	0.90	0.90	0.90	0.90	0.90	0.95	0.95	0.95	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	2%	0%	0%	0%	4%	1%	0%	0%	1%	0%
Adj. Flow (vph)	29	2	119	12	1	4	19	1149	14	6	961	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	31	119	0	13	4	19	1163	0	6	969	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			6			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	0.96	0.96	0.96	1.00	1.00	1.00	1.04	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
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	

# 6: Lowell Road (Route 3A) & Hampshire Drive/Oblate Drive Lanes, Volumes, Timings

2024 No-Build PM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Recall Mode	None	None		None	None		None	Min		None	Min	
Act Effct Green (s)		8.3	16.5		6.6	9.4	5.6	36.4		5.2	29.9	
Actuated g/C Ratio		0.13	0.26		0.10	0.15	0.09	0.58		0.08	0.47	
v/c Ratio		0.27	0.24		0.06	0.01	0.12	0.56		0.04	0.57	
Control Delay		37.9	5.6		34.6	0.0	36.4	11.4		36.8	15.1	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		37.9	5.6		34.6	0.0	36.4	11.4		36.8	15.1	
LOS		D	A		C	A	D	B		D	B	
Approach Delay		12.3			26.4			11.8			15.2	
Approach LOS		B			C			B			B	
Queue Length 50th (ft)		8	0		4	0	5	88		2	112	
Queue Length 95th (ft)		47	34		25	0	33	321		16	258	
Internal Link Dist (ft)		415			302			1435			1711	
Turn Bay Length (ft)			100			100	225			225		
Base Capacity (vph)		151	620		335	432	356	3168		358	3171	
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	0.19		0.04	0.01	0.05	0.37		0.02	0.31	

## Intersection Summary























Area Type:	Other
Cycle Length:	114
Actuated Cycle Length:	63
Natural Cycle:	55
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.57
Intersection Signal Delay:	13.4
Intersection LOS:	B
Intersection Capacity Utilization	52.3%
ICU Level of Service	A
Analysis Period (min)	15

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



# 7: Lowell Road (Route 3A) & Executive Drive Lanes, Volumes, Timings

2024 No-Build PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	235	3	84	24	2	23	59	993	7	17	704	41
Future Volume (vph)	235	3	84	24	2	23	59	993	7	17	704	41
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			0.956		0.950			0.950		
Satd. Flow (prot)	0	1733	1742	0	1816	1620	1678	3571	0	1646	3540	0
Flt Permitted		0.707			0.683		0.950			0.950		
Satd. Flow (perm)	0	1286	1742	0	1298	1620	1678	3571	0	1646	3540	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			93			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	0.90	0.90	0.90	0.90	0.90	0.90	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)	261	3	93	27	2	26	61	1024	7	18	765	45
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	264	93	0	29	26	61	1031	0	18	810	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			11			11	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.04	1.04	0.88	1.00	1.00	0.96	1.04	1.00	1.00	1.04	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
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	

# 7: Lowell Road (Route 3A) & Executive Drive Lanes, Volumes, Timings

2024 No-Build PM

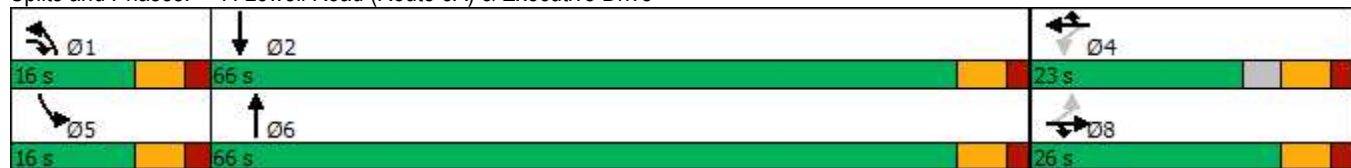


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Recall Mode	None	None		None	None	None	None	Min		None	Min	
Act Effct Green (s)		20.6	33.8		13.4	13.4	7.0	32.7		5.5	24.4	
Actuated g/C Ratio		0.30	0.50		0.20	0.20	0.10	0.48		0.08	0.36	
v/c Ratio		0.68	0.10		0.11	0.07	0.35	0.60		0.14	0.63	
Control Delay		35.6	3.7		23.5	0.3	37.3	14.5		35.8	20.5	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		35.6	3.7		23.5	0.3	37.3	14.5		35.8	20.5	
LOS		D	A		C	A	D	B		D	C	
Approach Delay		27.3			12.6			15.8			20.9	
Approach LOS		C			B			B			C	
Queue Length 50th (ft)		96	0		9	0	24	137		7	147	
Queue Length 95th (ft)		#273	26		34	0	68	270		29	213	
Internal Link Dist (ft)		412			497			1711			1088	
Turn Bay Length (ft)			225			80	350			150		
Base Capacity (vph)		391	996		394	556	255	3121		250	3095	
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		0.07	0.05	0.24	0.33		0.07	0.26	

## Intersection Summary

Area Type: Other  
 Cycle Length: 108  
 Actuated Cycle Length: 67.7  
 Natural Cycle: 55  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.68  
 Intersection Signal Delay: 19.3  
 Intersection LOS: B  
 Intersection Capacity Utilization 65.8%  
 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



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

## Lanes, Volumes, Timings

2024 No-Build PM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	2	26	33	0	50	28	1187	16	59	683	12
Future Volume (vph)	9	2	26	33	0	50	28	1187	16	59	683	12
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		0.960			0.950		0.950			0.950		
Satd. Flow (prot)	0	1824	1583	0	1865	1669	1745	1818	1615	1805	1876	0
Flt Permitted		0.736			0.750		0.950			0.950		
Satd. Flow (perm)	0	1398	1583	0	1473	1669	1745	1818	1615	1805	1876	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			91			56			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	0.90	0.90	0.90	0.90	0.90	0.90	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)	10	2	29	37	0	56	28	1199	16	63	727	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	12	29	0	37	56	28	1199	16	63	740	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			6			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	0.92	0.96	0.96	1.04	1.04	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
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	

# 8: Lowell Road (Route 3A) & Fox Hollow Drive/Nottingham Square Driveway Lanes, Volumes, Timings

2024 No-Build PM

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)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
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

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

## Lanes, Volumes, Timings

2024 No-Build PM

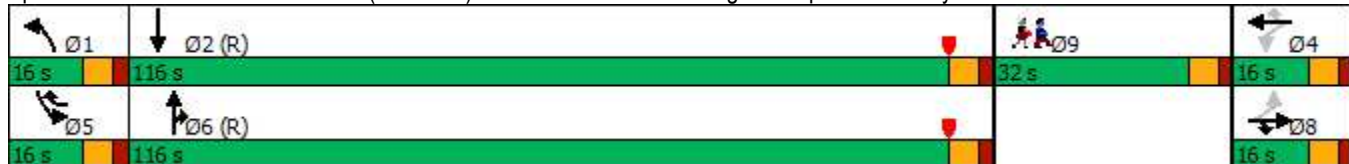


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Recall Mode	None	None	None	None	None	None	None	C-Min	C-Min	None	C-Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effect Green (s)		8.0	8.0		8.0	20.7	6.7	140.9	140.9	8.9	146.5	
Actuated g/C Ratio		0.04	0.04		0.04	0.12	0.04	0.78	0.78	0.05	0.81	
v/c Ratio		0.19	0.18		0.57	0.23	0.44	0.84	0.01	0.71	0.48	
Control Delay		88.9	2.6		115.7	16.9	104.3	22.5	0.0	121.8	10.3	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	2.1	
Total Delay		88.9	2.6		115.7	16.9	104.3	22.5	0.0	121.8	12.4	
LOS		F	A		F	B	F	C	A	F	B	
Approach Delay		27.8			56.2			24.0			21.0	
Approach LOS		C			E			C			C	
Queue Length 50th (ft)		14	0		44	0	33	744	0	74	226	
Queue Length 95th (ft)		39	0		89	46	71	#1842	0	#144	678	
Internal Link Dist (ft)		518			182			1325			469	
Turn Bay Length (ft)			50			100	210		325	125		
Base Capacity (vph)		77	173		81	251	96	1423	1283	100	1527	
Starvation Cap Reductn		0	0		0	0	0	0	0	0	612	
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		0.16	0.17		0.46	0.22	0.29	0.84	0.01	0.63	0.81	

### 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: 24.3  
 Intersection LOS: C  
 Intersection Capacity Utilization 85.8%  
 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
















# 8: Lowell Road (Route 3A) & Fox Hollow Drive/Nottingham Square Driveway Lanes, Volumes, Timings

2024 No-Build PM

Lane Group	Ø9
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	
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	

9: Lowell Road (Route 3A) & Pelham Road  
Lanes, Volumes, Timings

2024 No-Build PM

							Ø9
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations							
Traffic Volume (vph)	87	145	1126	111	112	673	
Future Volume (vph)	87	145	1126	111	112	673	
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	
Fr <sub>t</sub>		0.850	0.988				
Fl <sub>t</sub> Protected	0.950				0.950		
Satd. Flow (prot)	1805	850	1922	0	1805	1881	
Fl <sub>t</sub> Permitted	0.950				0.950		
Satd. Flow (perm)	1805	850	1922	0	1805	1881	
Right Turn on Red		Yes		Yes			
Satd. Flow (RTOR)		152	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	0.90	0.90	0.98	0.98	0.90	0.90	
Heavy Vehicles (%)	0%	0%	1%	0%	0%	1%	
Adj. Flow (vph)	97	161	1149	113	124	748	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	97	161	1262	0	124	748	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Right	Left	Left	
Median Width(ft)	12		13			12	
Link Offset(ft)	0		0			0	
Crosswalk Width(ft)	16		16			16	
Two way Left Turn Lane							
Headway Factor	1.00	2.17	0.96	0.96	1.00	1.00	
Turning Speed (mph)	15	9		9	15		
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

# 9: Lowell Road (Route 3A) & Pelham Road Lanes, Volumes, Timings

2024 No-Build PM

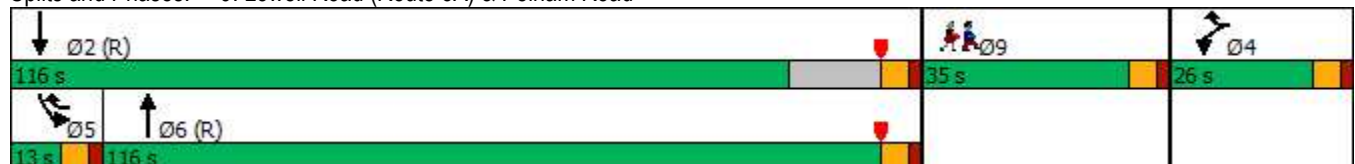


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø9
Recall Mode	None		C-Min		None		C-Min
Walk Time (s)							5.0
Flash Dont Walk (s)							24.0
Pedestrian Calls (#/hr)							5
Act Effct Green (s)	14.1	27.1	143.9		7.0	156.9	
Actuated g/C Ratio	0.07	0.14	0.76		0.04	0.83	
v/c Ratio	0.72	0.64	0.87		1.88	0.48	
Control Delay	114.1	23.4	25.8		487.8	8.6	
Queue Delay	0.0	0.0	47.5		0.0	0.0	
Total Delay	114.1	23.4	73.3		487.8	8.6	
LOS	F	C	E		F	A	
Approach Delay	57.5		73.3			76.8	
Approach LOS	E		E			E	
Queue Length 50th (ft)	121	10	843		~235	174	
Queue Length 95th (ft)	188	99	#2089		#390	657	
Internal Link Dist (ft)	432		469			1229	
Turn Bay Length (ft)		75			150		
Base Capacity (vph)	190	249	1456		66	1553	
Starvation Cap Reductn	0	0	333		0	0	
Spillback Cap Reductn	0	0	0		0	0	
Storage Cap Reductn	0	0	0		0	0	
Reduced v/c Ratio	0.51	0.65	1.12		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: 72.8  
 Intersection LOS: E  
 Intersection Capacity Utilization 93.1%  
 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 E**

**Capacity Analysis – 2034 No-Build Traffic Conditions**

**2034 No-Build Weekday A.M.**

# 1: River Road (Route 3A)/Lowell Road (Route 3A) & Dracut Road & Steele Road Lanes, Volumes, Timings

2034 No-Build AM



Lane Group	EBL	EBR	EBR2	NBL	NBT	NBR	SBL	SBT	SBR	NWL	NWR
Lane Configurations											
Traffic Volume (vph)	2	0	2	0	300	0	525	568	14	1	919
Future Volume (vph)	2	0	2	0	300	0	525	568	14	1	919
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
Fr <sub>t</sub>		0.850						0.996			0.850
Fl <sub>t</sub> Protected	0.950						0.950			0.950	
Satd. Flow (prot)	1685	1133	0	1773	3574	0	1652	3561	0	1805	1583
Fl <sub>t</sub> 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)		522						3			481
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	0.90	0.90	0.90	0.90	0.90	0.90	0.92	0.92	0.92	0.90	0.90
Heavy Vehicles (%)	0%	0%	33%	0%	1%	0%	2%	1%	0%	0%	2%
Adj. Flow (vph)	2	0	2	0	333	0	571	617	15	1	1021
Shared Lane Traffic (%)											
Lane Group Flow (vph)	2	2	0	0	333	0	571	632	0	1	1021
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)	5.7	5.7			13.2		45.6	64.8		10.8	61.2
Actuated g/C Ratio	0.06	0.06			0.15		0.51	0.72		0.12	0.68
v/c Ratio	0.02	0.00			0.64		0.68	0.25		0.00	0.83
Control Delay	40.0	0.0			42.1		26.9	3.0		36.0	14.0
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0
Total Delay	40.0	0.0			42.1		26.9	3.0		36.0	14.0
LOS	D	A			D		C	A		D	B

1: River Road (Route 3A)/Lowell Road (Route 3A) & Dracut Road & Steele Road  
Lanes, Volumes, Timings

2034 No-Build AM

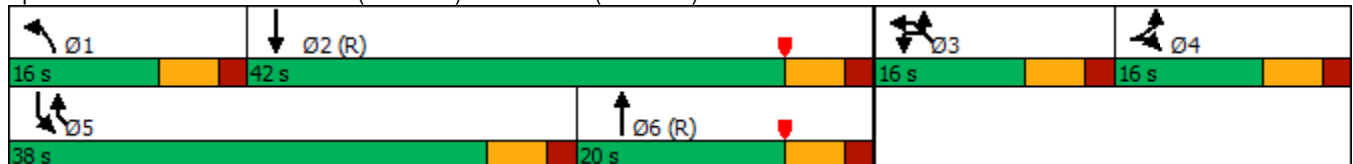


Lane Group	EBL	EBR	EBR2	NBL	NBT	NBR	SBL	SBT	SBR	NWL	NWR
Approach Delay	20.0				42.1			14.3		14.0	
Approach LOS	B				D			B		B	
Queue Length 50th (ft)	1	0			94		267	132		1	156
Queue Length 95th (ft)	8	0			138		#474	2		5	#750
Internal Link Dist (ft)	511				678			1653		542	
Turn Bay Length (ft)		50					775			100	
Base Capacity (vph)	187	589			555		836	2563		216	1230
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	0.01	0.00			0.60		0.68	0.25		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:	17.8
Intersection LOS:	B
Intersection Capacity Utilization:	75.2%
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



## 2: Lowell Road (Route 3A) & Site Driveway/Rena Avenue Lanes, Volumes, Timings

2034 No-Build AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	0	2	1	1	37	17	1255	2	8	1109	59
Future Volume (vph)	3	0	2	1	1	37	17	1255	2	8	1109	59
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
Fr <sub>t</sub>			0.850		0.871							0.992
Fl <sub>t</sub> Protected		0.950			0.999		0.950			0.950		
Satd. Flow (prot)	0	1685	1133	0	1657	0	1685	3538	0	1570	3514	0
Fl <sub>t</sub> Permitted		0.851			0.991		0.950			0.950		
Satd. Flow (perm)	0	1509	1133	0	1644	0	1685	3538	0	1570	3514	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			109		41							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	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.95	0.95	0.95
Heavy Vehicles (%)	0%	0%	33%	9%	0%	3%	0%	2%	20%	15%	2%	0%
Adj. Flow (vph)	3	0	2	1	1	41	19	1394	2	8	1167	62
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	3	2	0	43	0	19	1396	0	8	1229	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	75.2		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	0.01		0.25		0.13	0.47		0.06	0.44	
Control Delay		37.7	0.0		17.0		40.6	4.2		24.5	10.5	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		37.7	0.0		17.0		40.6	4.2		24.5	10.5	
LOS		D	A		B		D	A		C	B	



## 2: Lowell Road (Route 3A) & Site Driveway/Rena Avenue Lanes, Volumes, Timings

2034 No-Build AM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		22.6			17.0			4.7			10.6	
Approach LOS		C			B			A			B	
Queue Length 50th (ft)		2	0		1		10	132		4	251	
Queue Length 95th (ft)		10	0		32		m14	253		m9	235	
Internal Link Dist (ft)		430			477			1653			900	
Turn Bay Length (ft)			50				300			350		
Base Capacity (vph)		251	279		308		280	2957		209	2820	
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		0.01	0.01		0.14		0.07	0.47		0.04	0.44	

### 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: 0.47

Intersection Signal Delay: 7.6

Intersection LOS: A

Intersection Capacity Utilization 55.9%

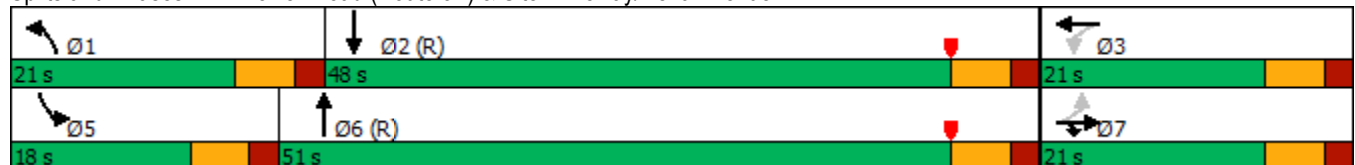
ICU Level of Service B

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



### 3: Lowell Road (Route 3A) & Sam's Club Driveway/Walmart Driveway Lanes, Volumes, Timings

2034 No-Build AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 		 	 		 	 	 	 	 		
Traffic Volume (vph)	117	5	64	17	6	82	72	1201	31	99	1085	73
Future Volume (vph)	117	5	64	17	6	82	72	1201	31	99	1085	73
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
Fr <sub>t</sub>			0.850			0.850			0.850			0.850
Fl <sub>t</sub> Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3467	1852	1568	3502	1900	1589	3467	3539	1583	3433	3574	1583
Fl <sub>t</sub> 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	0.90	0.90	0.90	0.90	0.90	0.90	0.96	0.96	0.96
Heavy Vehicles (%)	1%	6%	3%	0%	0%	5%	1%	2%	2%	2%	1%	2%
Adj. Flow (vph)	126	5	69	19	7	91	80	1334	34	103	1130	76
Shared Lane Traffic (%)												
Lane Group Flow (vph)	126	5	69	19	7	91	80	1334	34	103	1130	76
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)	9.4	14.4	14.4	7.0	6.9	6.9	8.4	45.7	45.7	9.0	46.2	46.2
Actuated g/C Ratio	0.10	0.16	0.16	0.08	0.08	0.08	0.09	0.51	0.51	0.10	0.51	0.51
v/c Ratio	0.35	0.02	0.17	0.07	0.05	0.31	0.25	0.74	0.04	0.30	0.62	0.08
Control Delay	39.8	34.2	0.9	38.8	39.0	2.8	44.6	17.0	0.1	48.8	17.7	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	39.8	34.2	0.9	38.8	39.0	2.8	44.6	17.0	0.1	48.8	17.7	0.3
LOS	D	C	A	D	D	A	D	B	A	D	B	A

### 3: Lowell Road (Route 3A) & Sam's Club Driveway/Walmart Driveway Lanes, Volumes, Timings

2034 No-Build AM

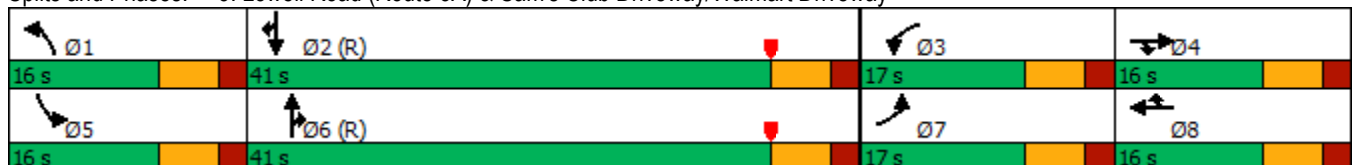


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		26.2			10.8			18.1			19.1	
Approach LOS		C			B			B			B	
Queue Length 50th (ft)	35	2	0	5	4	0	18	280	0	29	301	0
Queue Length 95th (ft)	61	13	0	15	17	0	49	#502	m0	m48	393	m1
Internal Link Dist (ft)		321			369			900			1109	
Turn Bay Length (ft)	175		175	150		200	350		175	350		
Base Capacity (vph)	423	308	412	428	211	338	386	1797	893	389	1836	901
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	0.30	0.02	0.17	0.04	0.03	0.27	0.21	0.74	0.04	0.26	0.62	0.08

#### 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: 0.74  
 Intersection Signal Delay: 18.8  
 Intersection LOS: B  
 Intersection Capacity Utilization 62.4%  
 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



#### 4: Lowell Road (Route 3A) & Sagamore Bridge Road Lanes, Volumes, Timings

2034 No-Build AM



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	1092	962	1000	386	380	1717
Future Volume (vph)	1092	962	1000	386	380	1717
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)		751				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)	1162	1023	1087	420	413	1866
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1162	1023	1087	420	413	1866
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)	29.2	90.0	23.0	47.8	16.8	90.0
Actuated g/C Ratio	0.32	1.00	0.26	0.53	0.19	1.00
v/c Ratio	0.98	0.61	1.23	0.22	0.63	0.68
Control Delay	53.3	1.6	139.2	3.0	37.9	1.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.3	1.6	139.2	3.0	37.9	1.3
LOS	D	A	F	A	D	A

# 4: Lowell Road (Route 3A) & Sagamore Bridge Road Lanes, Volumes, Timings

2034 No-Build AM

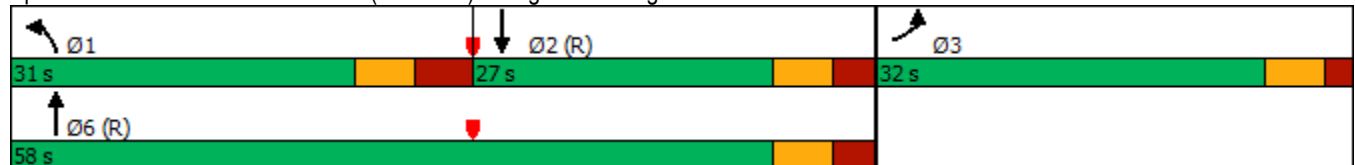


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Approach Delay	29.1			101.2	8.0	
Approach LOS	C			F	A	
Queue Length 50th (ft)	337	0	~385	4	113	0
Queue Length 95th (ft)	#514	0	#505	m4	156	0
Internal Link Dist (ft)	849			1109	919	
Turn Bay Length (ft)			525			200
Base Capacity (vph)	1189	1689	886	2005	786	2760
Starvation 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	0.98	0.61	1.23	0.21	0.53	0.68

## 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: 1.23  
 Intersection Signal Delay: 39.2  
 Intersection LOS: D  
 Intersection Capacity Utilization 86.9%  
 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



5: Lowell Road (Route 3A) & Flagstone Drive/Wason Road  
Lanes, Volumes, Timings

2034 No-Build AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	29	308	690	46	34	347	898	212	17	1179	11
Future Volume (vph)	65	29	308	690	46	34	347	898	212	17	1179	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		0.967		0.950	0.958		0.950			0.950		
Satd. Flow (prot)	0	1837	1583	1641	1657	1501	1787	3539	1583	1752	5078	0
Flt Permitted		0.967		0.950	0.958		0.950			0.950		
Satd. Flow (perm)	0	1837	1583	1641	1657	1501	1787	3539	1583	1752	5078	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			53			89			223			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	0.90	0.90	0.90	0.94	0.94	0.94	0.95	0.95	0.95	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	2%	1%	0%	4%	1%	2%	2%	3%	2%	6%
Adj. Flow (vph)	72	32	342	734	49	36	365	945	223	19	1310	12
Shared Lane Traffic (%)				47%								
Lane Group Flow (vph)	0	104	342	389	394	36	365	945	223	19	1322	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)		14.1	45.7	43.8	43.8	50.7	25.5	74.6	124.5	6.9	53.3	
Actuated g/C Ratio		0.09	0.28	0.27	0.27	0.31	0.16	0.46	0.77	0.04	0.33	
v/c Ratio		0.65	0.70	0.87	0.88	0.07	1.29	0.58	0.18	0.25	0.79	
Control Delay		93.3	54.4	77.5	77.6	0.2	206.3	35.5	1.0	89.6	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		93.3	54.4	77.5	77.6	0.2	206.3	35.5	1.0	89.6	53.1	
LOS		F	D	E	E	A	F	D	A	F	D	

# 5: Lowell Road (Route 3A) & Flagstone Drive/Wason Road Lanes, Volumes, Timings

2034 No-Build AM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay	63.5			74.2			71.2			53.6		
Approach LOS	E			E			E			D		
Queue Length 50th (ft)	113	297	421	426	0	~532	420	0	21	487		
Queue Length 95th (ft)	192	452	#676	#681	0	#832	533	23	55	571		
Internal Link Dist (ft)	725			506			919			1435		
Turn Bay Length (ft)	250			200			75			275		
Base Capacity (vph)	232	487	519	524	606	282	1712	1334	166	2089		
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	0.45	0.70	0.75	0.75	0.06	1.29	0.55	0.17	0.11	0.63		

**Intersection Summary**

Area Type: Other

Cycle Length: 184

Actuated Cycle Length: 161.1

Natural Cycle: 100

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.29

Intersection Signal Delay: 65.2      Intersection LOS: E

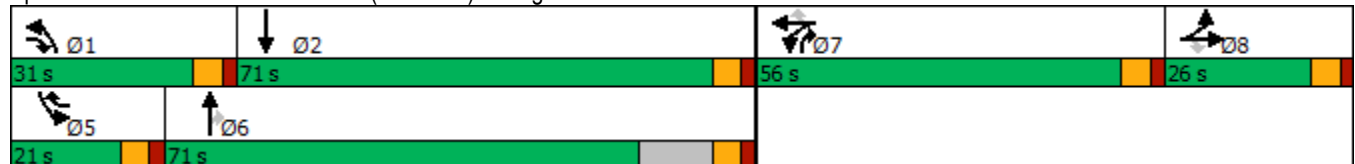
Intersection Capacity Utilization 84.2%      ICU Level of Service E

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



6: Lowell Road (Route 3A) & Hampshire Drive/Oblate Drive  
Lanes, Volumes, Timings

2034 No-Build AM

												
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	136	851	2	2	1248	66
Future Volume (vph)	9	0	13	2	2	5	136	851	2	2	1248	66
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	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	0%	11%	0%	0%	0%	3%	3%	0%	0%	3%	3%
Adj. Flow (vph)	10	0	14	2	2	6	151	946	2	2	1387	73
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	10	14	0	4	6	151	948	0	2	1460	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	12.2		6.4	9.0	11.8	67.6		5.2	47.8	
Actuated g/C Ratio		0.09	0.16		0.08	0.11	0.15	0.86		0.07	0.61	
v/c Ratio		0.06	0.05		0.03	0.02	0.58	0.31		0.02	0.69	
Control Delay		44.1	0.3		46.8	0.2	47.7	5.1		48.5	14.9	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		44.1	0.3		46.8	0.2	47.7	5.1		48.5	14.9	
LOS		D	A		D	A	D	A		D	B	



# 6: Lowell Road (Route 3A) & Hampshire Drive/Oblate Drive Lanes, Volumes, Timings

2034 No-Build AM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		18.6			18.8			11.0				14.9
Approach LOS		B			B			B				B
Queue Length 50th (ft)		4	0		2	0	54	0		1		146
Queue Length 95th (ft)		24	0		14	0	#213	225		10		502
Internal Link Dist (ft)		415			302			1435				1711
Turn Bay Length (ft)			100			100	225			225		
Base Capacity (vph)		255	329		277	367	297	2960		295		2792
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		0.01	0.02	0.51	0.32		0.01		0.52

## Intersection Summary























Area Type: Other  
 Cycle Length: 114  
 Actuated Cycle Length: 78.5  
 Natural Cycle: 60  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.69  
 Intersection Signal Delay: 13.3  
 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



7: Lowell Road (Route 3A) & Executive Drive  
Lanes, Volumes, Timings

2034 No-Build AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	43	2	16	164	35	117	197	474	70	124	1133	229
Future Volume (vph)	43	2	16	164	35	117	197	474	70	124	1133	229
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		0.954			0.960		0.950			0.950		
Satd. Flow (prot)	0	1571	1558	0	1809	1620	1711	3409	0	1728	3451	0
Flt Permitted		0.417			0.729		0.950			0.950		
Satd. Flow (perm)	0	687	1558	0	1374	1620	1711	3409	0	1728	3451	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			30			101		24			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	0.90	0.90	0.90	0.90	0.90	0.90	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)	48	2	18	182	39	130	216	521	77	136	1245	252
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	50	18	0	221	130	216	598	0	136	1497	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		16.7	16.7	10.1	51.2		9.7	50.7	
Actuated g/C Ratio		0.15	0.31		0.17	0.17	0.11	0.53		0.10	0.53	
v/c Ratio		0.48	0.04		0.92	0.36	1.20	0.33		0.78	0.81	
Control Delay		54.8	5.1		84.0	15.2	170.3	12.5		74.0	22.1	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		54.8	5.1		84.0	15.2	170.3	12.5		74.0	22.1	
LOS		D	A		F	B	F	B		E	C	

# 7: Lowell Road (Route 3A) & Executive Drive Lanes, Volumes, Timings

2034 No-Build AM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		41.6			58.5			54.4				26.5
Approach LOS		D			E			D				C
Queue Length 50th (ft)		28	0		137	15	~168	98		84		367
Queue Length 95th (ft)		71	10		#292	70	#345	139		#203		482
Internal Link Dist (ft)		412			497			1711				1088
Turn Bay Length (ft)			225			80	350			150		
Base Capacity (vph)		145	511		290	422	180	2172		182		2203
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	0.04		0.76	0.31	1.20	0.28		0.75		0.68

## Intersection Summary























Area Type:	Other
Cycle Length:	108
Actuated Cycle Length:	95.8
Natural Cycle:	90
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	1.20
Intersection Signal Delay:	38.7
Intersection LOS:	D
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: 7: Lowell Road (Route 3A) & Executive Drive



## 8: Lowell Road (Route 3A) & Fox Hollow Drive/Nottingham Square Driveway Lanes, Volumes, Timings

2034 No-Build AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	0	56	7	0	12	5	601	1	19	1431	3
Future Volume (vph)	13	0	56	7	0	12	5	601	1	19	1431	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	0.90	0.90	0.90	0.90	0.90	0.90	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	62	8	0	13	5	660	1	20	1506	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	14	62	0	8	13	5	660	1	20	1509	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	18.5	5.1	145.3	145.3	6.3	153.1	
Actuated g/C Ratio		0.04	0.04		0.04	0.10	0.03	0.81	0.81	0.04	0.85	
v/c Ratio		0.30	0.43		0.16	0.06	0.10	0.46	0.00	0.32	0.95	
Control Delay		100.2	13.6		90.1	0.5	89.8	9.3	0.0	97.4	26.6	

# 8: Lowell Road (Route 3A) & Fox Hollow Drive/Nottingham Square Driveway Lanes, Volumes, Timings

2034 No-Build AM

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	

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

## Lanes, Volumes, Timings

2034 No-Build AM

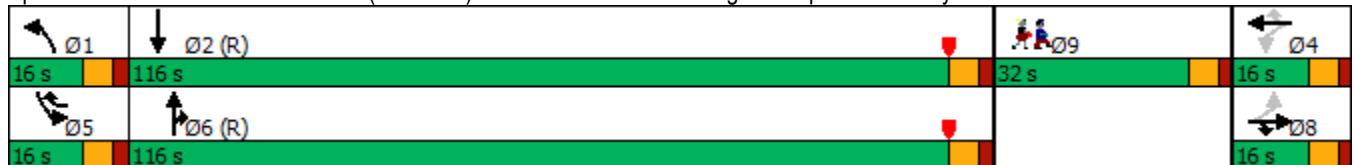


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	34.9	
Total Delay		100.2	13.6		90.1	0.5	89.8	9.3	0.0	97.4	61.6	
LOS		F	B		F	A	F	A	A	F	E	
Approach Delay		29.6			34.6			9.9			62.0	
Approach LOS		C			C			A			E	
Queue Length 50th (ft)		17	0		9	0	6	174	0	24	653	
Queue Length 95th (ft)		45	20		30	0	23	571	0	57	#2481	
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	1425	1320	100	1584	
Starvation Cap Reductn		0	0		0	0	0	0	0	0	186	
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	0.36		0.10	0.05	0.05	0.46	0.00	0.20	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: 0.95  
 Intersection Signal Delay: 45.6  
 Intersection LOS: D  
 Intersection Capacity Utilization 98.8%  
 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














# 8: Lowell Road (Route 3A) & Fox Hollow Drive/Nottingham Square Driveway Lanes, Volumes, Timings

2034 No-Build AM

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	

9: Lowell Road (Route 3A) & Pelham Road  
Lanes, Volumes, Timings

2034 No-Build AM

							Ø9
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø9
Lane Configurations							
Traffic Volume (vph)	261	82	527	95	72	1195	
Future Volume (vph)	261	82	527	95	72	1195	
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	
Fr <sub>t</sub>		0.850	0.979				
Fl <sub>t</sub> Protected	0.950				0.950		
Satd. Flow (prot)	1787	802	1836	0	1719	1863	
Fl <sub>t</sub> 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	0.90	0.90	0.92	0.92	0.96	0.96	
Heavy Vehicles (%)	1%	6%	5%	3%	5%	2%	
Adj. Flow (vph)	290	91	573	103	75	1245	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	290	91	676	0	75	1245	
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	1.54	0.56	0.51		1.19	0.84	
Control Delay	318.3	62.7	14.8		243.1	20.7	



# 9: Lowell Road (Route 3A) & Pelham Road Lanes, Volumes, Timings

2034 No-Build AM

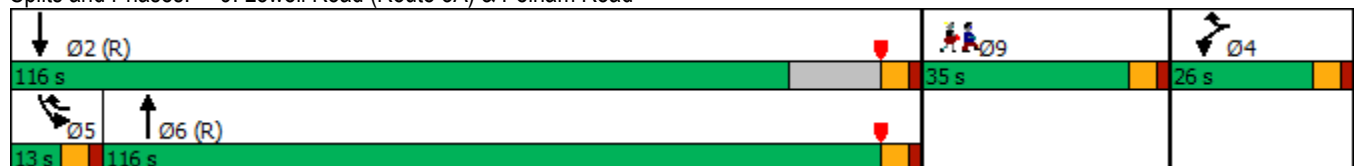


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø9
Queue Delay	0.0	0.0	4.9		0.0	0.0	
Total Delay	318.3	62.7	19.8		243.1	20.7	
LOS	F	E	B		F	C	
Approach Delay	257.2		19.8			33.3	
Approach LOS	F		B			C	
Queue Length 50th (ft)	~506	72	286		~112	679	
Queue Length 95th (ft)	#716	144	683		#236	#1925	
Internal Link Dist (ft)	432		469			1229	
Turn Bay Length (ft)		75			150		
Base Capacity (vph)	188	163	1336		63	1480	
Starvation Cap Reductn	0	0	579		0	0	
Spillback Cap Reductn	0	0	0		0	0	
Storage Cap Reductn	0	0	0		0	0	
Reduced v/c Ratio	1.54	0.56	0.89		1.19	0.84	

## 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: 1.54  
 Intersection Signal Delay: 65.4  
 Intersection LOS: E  
 Intersection Capacity Utilization 87.4%  
 ICU Level of Service E  
 Analysis Period (min) 15  
 ~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

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



**2034 No-Build Weekday P.M.**

1: River Road (Route 3A)/Lowell Road (Route 3A) & Dracut Road & Steele Road  
Lanes, Volumes, Timings

2034 No-Build PM



Lane Group	EBL	EBR	EBR2	NBL	NBT	NBR	SBL	SBT	SBR	NWL2	NWL	NWR
Lane Configurations												
Traffic Volume (vph)	41	2	2	1	657	1	965	441	15	5	0	702
Future Volume (vph)	41	2	2	1	657	1	965	441	15	5	0	702
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
Fr <sub>t</sub>		0.850						0.995				0.850
Fl <sub>t</sub> Protected	0.950			0.950			0.950				0.950	
Satd. Flow (prot)	1668	1507	0	1685	3610	0	1685	3558	0	0	1805	1615
Fl <sub>t</sub> 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				256
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	0.90	0.90	0.90	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)	46	2	2	1	722	1	1072	490	17	5	0	771
Shared Lane Traffic (%)												
Lane Group Flow (vph)	46	4	0	1	723	0	1072	507	0	0	5	771
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Right	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)	10				10			20				12
Link Offset(ft)	0				0			0				0
Crosswalk Width(ft)	16				16			16				16
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.09	1.00	1.00	1.09	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	9	15		9	15		9	15	15	9
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	

1: River Road (Route 3A)/Lowell Road (Route 3A) & Dracut Road & Steele Road  
Lanes, Volumes, Timings

2034 No-Build PM

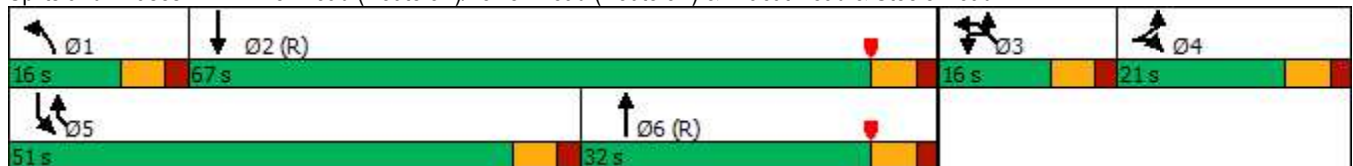


Lane Group	EBL	EBR	EBR2	NBL	NBT	NBR	SBL	SBT	SBR	NWL2	NWL	NWR
Recall Mode	None	None		None	C-Min		None	C-Min		None	None	
Act Effct Green (s)	8.7	8.7		5.6	26.0		53.6	83.2			10.0	64.8
Actuated g/C Ratio	0.07	0.07		0.05	0.22		0.45	0.69			0.08	0.54
v/c Ratio	0.38	0.01		0.01	0.92		1.43	0.21			0.03	0.78
Control Delay	61.1	0.0		55.0	64.7		222.0	4.5			51.2	19.8
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Total Delay	61.1	0.0		55.0	64.7		222.0	4.5			51.2	19.8
LOS	E	A		D	E		F	A			D	B
Approach Delay	56.2				64.7			152.1			20.0	
Approach LOS	E				E			F			C	
Queue Length 50th (ft)	35	0		1	291		~1120	34			4	229
Queue Length 95th (ft)	72	0		7	#405		#1421	95			17	#332
Internal Link Dist (ft)	511				678			1653			542	
Turn Bay Length (ft)		50		200			775				100	
Base Capacity (vph)	208	355		140	782		751	2466			150	989
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	0.01		0.01	0.92		1.43	0.21			0.03	0.78

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: 1.43  
 Intersection Signal Delay: 97.6      Intersection LOS: F  
 Intersection Capacity Utilization 100.0%      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



2: Lowell Road (Route 3A) & Site Driveway/Rena Avenue  
Lanes, Volumes, Timings

2034 No-Build PM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕		↖	↕	↕	↖	↕	
Traffic Volume (vph)	58	0	20	1	0	17	2	1412	6	27	1391	7
Future Volume (vph)	58	0	20	1	0	17	2	1412	6	27	1391	7
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	0.90	0.90	0.90	0.90	0.90	0.90	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)	64	0	22	1	0	19	2	1518	6	30	1546	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	64	22	0	20	0	2	1524	0	30	1554	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			18			18	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	0.96	0.96	0.96	1.09	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
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	

## 2: Lowell Road (Route 3A) & Site Driveway/Rena Avenue Lanes, Volumes, Timings

2034 No-Build PM

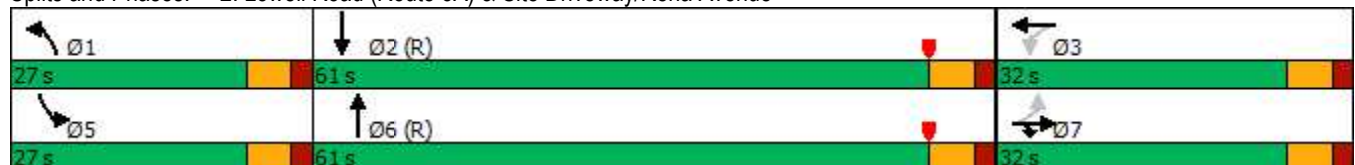


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Recall Mode	None	None	None	None	None		None	C-Min		None	C-Min	
Act Effct Green (s)		12.2	12.2		10.2		6.8	90.3		8.5	97.0	
Actuated g/C Ratio		0.10	0.10		0.08		0.06	0.75		0.07	0.81	
v/c Ratio		0.48	0.10		0.09		0.02	0.56		0.24	0.53	
Control Delay		62.1	0.8		0.8		64.0	8.9		47.1	5.9	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		62.1	0.8		0.8		64.0	8.9		47.1	5.9	
LOS		E	A		A		E	A		D	A	
Approach Delay		46.4			0.8			9.0			6.7	
Approach LOS		D			A			A			A	
Queue Length 50th (ft)		48	0		0		1	212		25	92	
Queue Length 95th (ft)		90	0		0		m1	m637		m35	219	
Internal Link Dist (ft)		430			477			1653			900	
Turn Bay Length (ft)			50				300			350		
Base Capacity (vph)		282	390		429		294	2714		315	2914	
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		0.23	0.06		0.05		0.01	0.56		0.10	0.53	

### 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: 0.56  
 Intersection Signal Delay: 8.8  
 Intersection LOS: A  
 Intersection Capacity Utilization 62.0%  
 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



### 3: Lowell Road (Route 3A) & Sam's Club Driveway/Walmart Driveway Lanes, Volumes, Timings

2034 No-Build PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 			 			 	 		 	 	
Traffic Volume (vph)	288	15	131	102	23	283	110	1305	86	360	1205	229
Future Volume (vph)	288	15	131	102	23	283	110	1305	86	360	1205	229
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)			146			236			136			196
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	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.91	0.91	0.91
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	1%	0%
Adj. Flow (vph)	320	17	146	113	26	314	122	1450	96	396	1324	252
Shared Lane Traffic (%)												
Lane Group Flow (vph)	320	17	146	113	26	314	122	1450	96	396	1324	252
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		34			32			34			34	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	0.96	1.00	1.00	1.00	0.96	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
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

### 3: Lowell Road (Route 3A) & Sam's Club Driveway/Walmart Driveway Lanes, Volumes, Timings

2034 No-Build PM

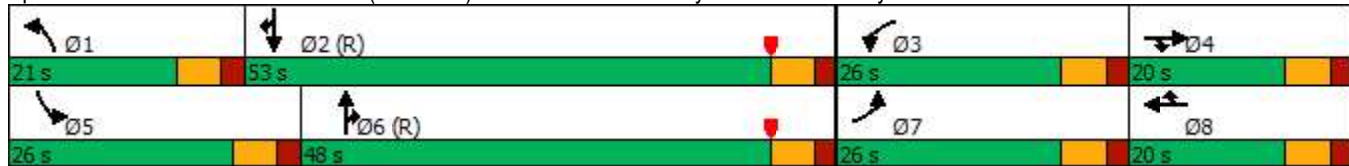


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Recall Mode	None	None	None	None	None	None	None	C-Min	C-Min	None	C-Min	C-Min
Act Effct Green (s)	16.8	18.5	18.5	10.2	11.9	11.9	10.5	48.8	48.8	18.5	56.8	56.8
Actuated g/C Ratio	0.14	0.15	0.15	0.08	0.10	0.10	0.09	0.41	0.41	0.15	0.47	0.47
v/c Ratio	0.65	0.06	0.39	0.38	0.14	0.83	0.40	0.99	0.13	0.74	0.78	0.29
Control Delay	55.1	41.7	10.0	55.2	49.6	33.4	69.0	43.9	1.2	60.0	26.4	2.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.1	41.7	10.0	55.2	49.6	33.4	69.0	43.9	1.2	60.0	26.4	2.4
LOS	E	D	B	E	D	C	E	D	A	E	C	A
Approach Delay		41.0			39.8			43.3			30.1	
Approach LOS		D			D			D			C	
Queue Length 50th (ft)	122	11	0	43	18	57	52	~663	0	142	503	0
Queue Length 95th (ft)	166	32	57	72	47	#190	85	#817	8	m168	#652	m26
Internal Link Dist (ft)		321			369			900			1109	
Turn Bay Length (ft)	175		175	150		200	350		175	350		
Base Capacity (vph)	583	307	376	583	225	406	433	1469	737	583	1690	867
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.55	0.06	0.39	0.19	0.12	0.77	0.28	0.99	0.13	0.68	0.78	0.29

#### 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: 0.99  
 Intersection Signal Delay: 37.0  
 Intersection LOS: D  
 Intersection Capacity Utilization 76.8%  
 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





#### 4: Lowell Road (Route 3A) & Sagamore Bridge Road Lanes, Volumes, Timings

2034 No-Build PM



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	1677	1350	1190	708	505	1415
Future Volume (vph)	1677	1350	1190	708	505	1415
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
Fr <sub>t</sub>		0.850				0.850
Fl <sub>t</sub> Protected	0.950		0.950			
Satd. Flow (prot)	3698	1706	3502	3610	3610	2814
Fl <sub>t</sub> Permitted	0.950		0.950			
Satd. Flow (perm)	3698	1706	3502	3610	3610	2814
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		515				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	0.90	0.90
Heavy Vehicles (%)	1%	1%	0%	0%	0%	1%
Adj. Flow (vph)	1747	1406	1266	753	561	1572
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1747	1406	1266	753	561	1572
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	28			34	24	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	0.92	0.92	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
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	

# 4: Lowell Road (Route 3A) & Sagamore Bridge Road Lanes, Volumes, Timings

2034 No-Build PM

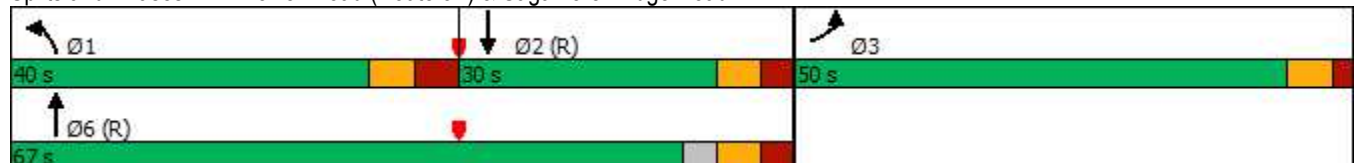


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Recall Mode	None		None	C-Min	C-Min	
Act Effct Green (s)	44.5	120.0	32.0	62.5	22.5	120.0
Actuated g/C Ratio	0.37	1.00	0.27	0.52	0.19	1.00
v/c Ratio	1.27	0.82	1.36	0.40	0.83	0.56
Control Delay	162.5	4.7	191.5	8.4	58.5	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	162.5	4.7	191.5	8.4	58.5	0.8
LOS	F	A	F	A	E	A
Approach Delay	92.1			123.2	16.0	
Approach LOS	F			F	B	
Queue Length 50th (ft)	~888	0	~661	113	221	0
Queue Length 95th (ft)	#1025	0	m#709	m120	#290	0
Internal Link Dist (ft)	849			1109	919	
Turn Bay Length (ft)				525	200	
Base Capacity (vph)	1371	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	1.27	0.82	1.36	0.40	0.81	0.56

## 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: 1.36  
 Intersection Signal Delay: 78.5  
 Intersection LOS: E  
 Intersection Capacity Utilization 112.4%  
 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



5: Lowell Road (Route 3A) & Flagstone Drive/Wason Road  
Lanes, Volumes, Timings

2034 No-Build PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	54	100	482	489	19	31	154	1140	1116	81	980	5
Future Volume (vph)	54	100	482	489	19	31	154	1140	1116	81	980	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			276			
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	0.90	0.90	0.90	0.90	0.90	0.90	0.94	0.94	0.94	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	1%	0%	0%	1%	1%	1%	0%	0%	1%	0%
Adj. Flow (vph)	60	111	536	543	21	34	164	1213	1187	90	1089	6
Shared Lane Traffic (%)				48%								
Lane Group Flow (vph)	0	171	536	282	282	34	164	1213	1187	90	1095	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			18			20			20	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.04	1.04	1.04	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
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	

# 5: Lowell Road (Route 3A) & Flagstone Drive/Wason Road Lanes, Volumes, Timings

2034 No-Build PM

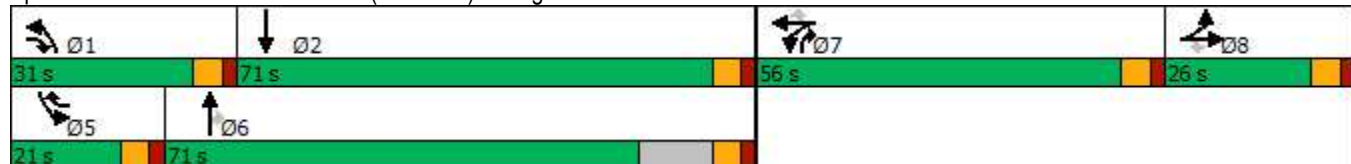


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Recall Mode	None	None	None	None	None	None	None	Min	None	None	Min	
Act Effct Green (s)		18.5	49.7	49.9	49.9	62.3	25.1	61.6	117.4	12.4	48.9	
Actuated g/C Ratio		0.11	0.30	0.30	0.30	0.37	0.15	0.37	0.71	0.07	0.29	
v/c Ratio		0.83	1.04	0.57	0.57	0.05	0.61	0.92	0.97	0.67	0.73	
Control Delay		102.6	101.2	56.1	55.9	0.2	78.6	62.0	38.4	100.3	55.8	
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.7	0.0	0.0	
Total Delay		102.6	101.2	56.1	55.9	0.2	78.6	62.0	57.2	100.3	55.8	
LOS		F	F	E	E	A	E	E	E	F	E	
Approach Delay		101.6			52.8			60.8			59.2	
Approach LOS		F			D			E			E	
Queue Length 50th (ft)		191	~613	289	288	0	177	680	1042	101	400	
Queue Length 95th (ft)		#318	#867	406	406	0	267	794	#1548	168	454	
Internal Link Dist (ft)		725			506			919			1435	
Turn Bay Length (ft)			250	200		75	575		275	175		
Base Capacity (vph)		225	514	500	503	657	269	1617	1223	163	2012	
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		0.76	1.04	0.56	0.56	0.05	0.61	0.75	1.04	0.55	0.54	

## Intersection Summary























Area Type: Other  
 Cycle Length: 184  
 Actuated Cycle Length: 166.5  
 Natural Cycle: 75  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 1.04  
 Intersection Signal Delay: 65.2  
 Intersection LOS: E  
 Intersection Capacity Utilization 96.8%  
 ICU Level of Service F  
 Analysis Period (min) 15  
 ~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

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



6: Lowell Road (Route 3A) & Hampshire Drive/Oblate Drive  
Lanes, Volumes, Timings

2034 No-Build PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	2	118	12	1	5	20	1205	14	6	951	8
Future Volume (vph)	29	2	118	12	1	5	20	1205	14	6	951	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		0.955			0.956		0.950			0.950		
Satd. Flow (prot)	0	1814	1583	0	1877	1669	1736	3568	0	1745	3571	0
Flt Permitted		0.446					0.950			0.950		
Satd. Flow (perm)	0	847	1583	0	1963	1669	1736	3568	0	1745	3571	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			131			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	0.90	0.90	0.90	0.90	0.90	0.90	0.95	0.95	0.95	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	2%	0%	0%	0%	4%	1%	0%	0%	1%	0%
Adj. Flow (vph)	32	2	131	13	1	6	21	1268	15	7	1057	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	34	131	0	14	6	21	1283	0	7	1066	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			6			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	0.96	0.96	0.96	1.00	1.00	1.00	1.04	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
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	

6: Lowell Road (Route 3A) & Hampshire Drive/Oblate Drive  
Lanes, Volumes, Timings

2034 No-Build PM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Recall Mode	None	None		None	None		None	Min		None	Min	
Act Effct Green (s)		8.7	17.2		6.8	9.7	5.9	42.3		5.3	34.9	
Actuated g/C Ratio		0.12	0.24		0.10	0.14	0.08	0.60		0.07	0.49	
v/c Ratio		0.33	0.27		0.07	0.02	0.15	0.60		0.05	0.61	
Control Delay		45.3	6.2		39.2	0.2	41.4	12.7		41.7	15.2	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		45.3	6.2		39.2	0.2	41.4	12.7		41.7	15.2	
LOS		D	A		D	A	D	B		D	B	
Approach Delay		14.2			27.5			13.1			15.4	
Approach LOS		B			C			B			B	
Queue Length 50th (ft)		10	0		4	0	7	108		2	133	
Queue Length 95th (ft)		54	39		29	0	38	370		19	295	
Internal Link Dist (ft)		415			302			1435			1711	
Turn Bay Length (ft)			100			100	225			225		
Base Capacity (vph)		129	575		300	394	318	3036		320	3038	
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	0.23		0.05	0.02	0.07	0.42		0.02	0.35	

Intersection Summary

Area Type:	Other
Cycle Length:	114
Actuated Cycle Length:	71
Natural Cycle:	60
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.61
Intersection Signal Delay:	14.3
Intersection LOS:	B
Intersection Capacity Utilization:	55.4%
ICU Level of Service:	B
Analysis Period (min):	15

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



# 7: Lowell Road (Route 3A) & Executive Drive Lanes, Volumes, Timings

2034 No-Build PM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	259	3	93	27	2	26	64	1095	8	19	773	45
Future Volume (vph)	259	3	93	27	2	26	64	1095	8	19	773	45
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			0.955		0.950			0.950		
Satd. Flow (prot)	0	1733	1742	0	1814	1620	1678	3571	0	1646	3540	0
Flt Permitted		0.705			0.658		0.950			0.950		
Satd. Flow (perm)	0	1282	1742	0	1250	1620	1678	3571	0	1646	3540	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			103			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	0.90	0.90	0.90	0.90	0.90	0.90	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)	288	3	103	30	2	29	66	1129	8	21	840	49
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	291	103	0	32	29	66	1137	0	21	889	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			11			11	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.04	1.04	0.88	1.00	1.00	0.96	1.04	1.00	1.00	1.04	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
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	

# 7: Lowell Road (Route 3A) & Executive Drive Lanes, Volumes, Timings

2034 No-Build PM

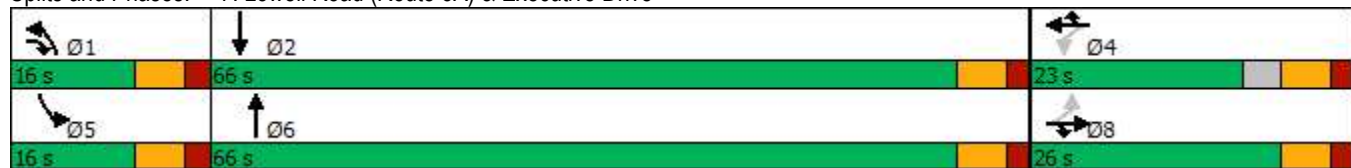


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Recall Mode	None	None		None	None	None	None	Min		None	Min	
Act Effct Green (s)		20.8	34.2		13.4	13.4	7.2	34.7		5.7	28.5	
Actuated g/C Ratio		0.29	0.47		0.19	0.19	0.10	0.48		0.08	0.39	
v/c Ratio		0.79	0.12		0.14	0.08	0.40	0.66		0.16	0.63	
Control Delay		46.5	4.2		27.1	0.4	41.6	16.7		39.4	19.8	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		46.5	4.2		27.1	0.4	41.6	16.7		39.4	19.8	
LOS		D	A		C	A	D	B		D	B	
Approach Delay		35.4			14.4			18.1			20.3	
Approach LOS		D			B			B			C	
Queue Length 50th (ft)		115	0		10	0	27	158		9	167	
Queue Length 95th (ft)		#342	30		40	0	77	308		34	235	
Internal Link Dist (ft)		412			497			1711			1088	
Turn Bay Length (ft)			225			80	350			150		
Base Capacity (vph)		368	951		359	530	241	2968		236	2944	
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		0.79	0.11		0.09	0.05	0.27	0.38		0.09	0.30	

## Intersection Summary

Area Type: Other  
 Cycle Length: 108  
 Actuated Cycle Length: 72.2  
 Natural Cycle: 60  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.79  
 Intersection Signal Delay: 21.4  
 Intersection LOS: C  
 Intersection Capacity Utilization 70.0%  
 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





# 8: Lowell Road (Route 3A) & Fox Hollow Drive/Nottingham Square Driveway Lanes, Volumes, Timings

2034 No-Build PM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	2	29	36	0	56	31	1309	17	65	754	13
Future Volume (vph)	10	2	29	36	0	56	31	1309	17	65	754	13
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		0.959			0.950		0.950			0.950		
Satd. Flow (prot)	0	1822	1583	0	1865	1669	1745	1818	1615	1805	1876	0
Flt Permitted		0.731			0.749		0.950			0.950		
Satd. Flow (perm)	0	1389	1583	0	1471	1669	1745	1818	1615	1805	1876	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			91			62			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	0.90	0.90	0.90	0.90	0.90	0.90	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	2	32	40	0	62	31	1322	17	69	802	14
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	13	32	0	40	62	31	1322	17	69	816	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			6			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	0.92	0.96	0.96	1.04	1.04	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
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	

8: Lowell Road (Route 3A) & Fox Hollow Drive/Nottingham Square Driveway  
Lanes, Volumes, Timings

2034 No-Build PM

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)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
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

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

## Lanes, Volumes, Timings

2034 No-Build PM

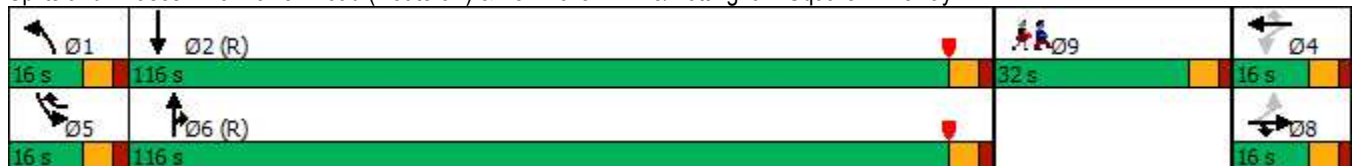


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Recall Mode	None	None	None	None	None	None	None	C-Min	C-Min	None	C-Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effect Green (s)		8.2	8.2		8.2	21.1	7.0	140.5	140.5	9.1	146.1	
Actuated g/C Ratio		0.05	0.05		0.05	0.12	0.04	0.78	0.78	0.05	0.81	
v/c Ratio		0.21	0.20		0.61	0.25	0.46	0.93	0.01	0.76	0.54	
Control Delay		89.5	2.9		119.1	16.1	105.6	30.9	0.0	126.5	11.5	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	2.7	
Total Delay		89.5	2.9		119.1	16.1	105.6	30.9	0.0	126.5	14.2	
LOS		F	A		F	B	F	C	A	F	B	
Approach Delay		27.9			56.5			32.2			23.0	
Approach LOS		C			E			C			C	
Queue Length 50th (ft)		15	0		47	0	37	1038	0	82	274	
Queue Length 95th (ft)		42	0		94	49	77	#2138	0	#164	806	
Internal Link Dist (ft)		518			182			1325			469	
Turn Bay Length (ft)			50			100	210		325	125		
Base Capacity (vph)		77	173		81	258	96	1419	1280	100	1522	
Starvation Cap Reductn		0	0		0	0	0	0	0	0	565	
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		0.17	0.18		0.49	0.24	0.32	0.93	0.01	0.69	0.85	

### 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: 29.7  
 Intersection LOS: C  
 Intersection Capacity Utilization 92.2%  
 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














# 8: Lowell Road (Route 3A) & Fox Hollow Drive/Nottingham Square Driveway Lanes, Volumes, Timings

2034 No-Build PM

Lane Group	Ø9
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	
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	

9: Lowell Road (Route 3A) & Pelham Road  
Lanes, Volumes, Timings

2034 No-Build PM

							Ø9
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations							
Traffic Volume (vph)	96	160	1242	123	124	742	
Future Volume (vph)	96	160	1242	123	124	742	
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	
Fr <sub>t</sub>		0.850	0.988				
Fl <sub>t</sub> Protected	0.950				0.950		
Satd. Flow (prot)	1805	850	1922	0	1805	1881	
Fl <sub>t</sub> 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	0.90	0.90	0.98	0.98	0.90	0.90	
Heavy Vehicles (%)	0%	0%	1%	0%	0%	1%	
Adj. Flow (vph)	107	178	1267	126	138	824	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	107	178	1393	0	138	824	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Right	Left	Left	
Median Width(ft)	12		13			12	
Link Offset(ft)	0		0			0	
Crosswalk Width(ft)	16		16			16	
Two way Left Turn Lane							
Headway Factor	1.00	2.17	0.96	0.96	1.00	1.00	
Turning Speed (mph)	15	9		9	15		
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

# 9: Lowell Road (Route 3A) & Pelham Road Lanes, Volumes, Timings

2034 No-Build PM

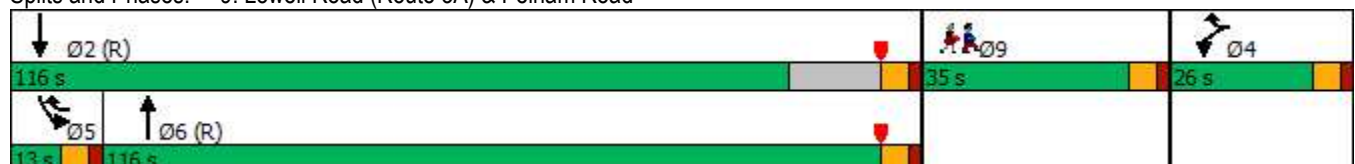


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø9
Recall Mode	None		C-Min		None		C-Min
Walk Time (s)							5.0
Flash Dont Walk (s)							24.0
Pedestrian Calls (#/hr)							5
Act Effct Green (s)	14.9	27.9	143.1		7.0	156.1	
Actuated g/C Ratio	0.08	0.15	0.75		0.04	0.82	
v/c Ratio	0.76	0.70	0.96		2.09	0.53	
Control Delay	116.2	29.6	37.7		574.4	9.7	
Queue Delay	0.0	0.0	42.8		0.0	0.0	
Total Delay	116.2	29.6	80.5		574.4	9.7	
LOS	F	C	F		F	A	
Approach Delay	62.1		80.5			90.7	
Approach LOS	E		F			F	
Queue Length 50th (ft)	133	28	1196		~271	215	
Queue Length 95th (ft)	204	130	#2429		#431	775	
Internal Link Dist (ft)	432		469			1229	
Turn Bay Length (ft)		75			150		
Base Capacity (vph)	190	252	1448		66	1545	
Starvation Cap Reductn	0	0	259		0	0	
Spillback Cap Reductn	0	0	0		0	0	
Storage Cap Reductn	0	0	0		0	0	
Reduced v/c Ratio	0.56	0.71	1.17		2.09	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: 2.09  
 Intersection Signal Delay: 82.2  
 Intersection LOS: F  
 Intersection Capacity Utilization 101.6%  
 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 F**

**Capacity Analysis – 2024 Build Traffic Conditions**

**2024 Build Weekday A.M.**



1: River Road (Route 3A)/Lowell Road (Route 3A) & Dracut Road & Steele Road  
Lanes, Volumes, Timings

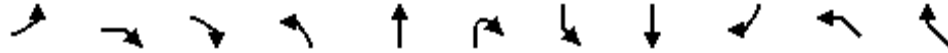
2024 Build AM



Lane Group	EBL	EBR	EBR2	NBL	NBT	NBR	SBL	SBT	SBR	NWL	NWR
Lane Configurations											
Traffic Volume (vph)	2	0	2	0	280	0	499	522	13	1	856
Future Volume (vph)	2	0	2	0	280	0	499	522	13	1	856
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
Fr <sub>t</sub>		0.850						0.996			0.850
Fl <sub>t</sub> Protected	0.950						0.950			0.950	
Satd. Flow (prot)	1685	1133	0	1773	3574	0	1652	3561	0	1805	1583
Fl <sub>t</sub> 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)		538						3			488
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	0.90	0.90	0.90	0.90	0.90	0.90	0.92	0.92	0.92	0.90	0.90
Heavy Vehicles (%)	0%	0%	33%	0%	1%	0%	2%	1%	0%	0%	2%
Adj. Flow (vph)	2	0	2	0	311	0	542	567	14	1	951
Shared Lane Traffic (%)											
Lane Group Flow (vph)	2	2	0	0	311	0	542	581	0	1	951
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)	5.7	5.7			19.8		38.5	64.3		11.3	54.6
Actuated g/C Ratio	0.06	0.06			0.22		0.43	0.71		0.13	0.61
v/c Ratio	0.02	0.00			0.40		0.77	0.23		0.00	0.83
Control Delay	40.0	0.0			33.4		31.0	1.1		36.0	14.1
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0
Total Delay	40.0	0.0			33.4		31.0	1.1		36.0	14.1
LOS	D	A			C		C	A		D	B

# 1: River Road (Route 3A)/Lowell Road (Route 3A) & Dracut Road & Steele Road Lanes, Volumes, Timings

2024 Build AM

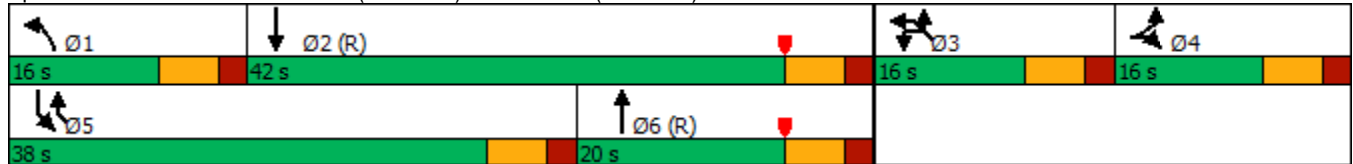


Lane Group	EBL	EBR	EBR2	NBL	NBT	NBR	SBL	SBT	SBR	NWL	NWR
Approach Delay	20.0				33.4			15.5		14.1	
Approach LOS	B				C			B		B	
Queue Length 50th (ft)	1	0			78		215	3		1	169
Queue Length 95th (ft)	8	0			130		#435	6		5	#481
Internal Link Dist (ft)	511				678			1653		542	
Turn Bay Length (ft)		50					775			100	
Base Capacity (vph)	187	604			785		710	2543		226	1155
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	0.01	0.00			0.40		0.76	0.23		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:	17.3
Intersection LOS:	B
Intersection Capacity Utilization:	70.7%
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



## 2: Lowell Road (Route 3A) & Site Driveway/Rena Avenue Lanes, Volumes, Timings

2024 Build AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	183	0	33	1	1	34	47	1138	2	7	1004	234
Future Volume (vph)	183	0	33	1	1	34	47	1138	2	7	1004	234
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
Fr <sub>t</sub>			0.850		0.872							0.972
Fl <sub>t</sub> Protected		0.950			0.999		0.950			0.950		
Satd. Flow (prot)	0	1685	1507	0	1659	0	1685	3538	0	1752	3388	0
Fl <sub>t</sub> Permitted		0.731			0.992		0.950			0.950		
Satd. Flow (perm)	0	1296	1507	0	1648	0	1685	3538	0	1752	3388	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			109		38							42
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	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.95	0.95	0.95
Heavy Vehicles (%)	0%	0%	0%	9%	0%	3%	0%	2%	20%	3%	3%	6%
Adj. Flow (vph)	203	0	37	1	1	38	52	1264	2	7	1057	246
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	203	37	0	40	0	52	1266	0	7	1303	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)		16.7	16.7		11.6		9.2	58.5		7.0	51.4	
Actuated g/C Ratio		0.19	0.19		0.13		0.10	0.65		0.08	0.57	
v/c Ratio		0.84	0.10		0.16		0.30	0.55		0.05	0.67	
Control Delay		67.4	0.5		13.3		42.5	9.4		30.1	19.1	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		67.4	0.5		13.3		42.5	9.4		30.1	19.1	
LOS		E	A		B		D	A		C	B	

## 2: Lowell Road (Route 3A) & Site Driveway/Rena Avenue Lanes, Volumes, Timings

2024 Build AM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		57.1			13.3			10.7				19.2
Approach LOS		E			B			B				B
Queue Length 50th (ft)		115	0		1		29	142		4		152
Queue Length 95th (ft)		#249	0		28		m40	257		m8		259
Internal Link Dist (ft)		430			477			1653				900
Turn Bay Length (ft)			50				300			350		
Base Capacity (vph)		241	369		306		280	2300		233		1952
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		0.84	0.10		0.13		0.19	0.55		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: 0.84

Intersection Signal Delay: 18.4

Intersection LOS: B

Intersection Capacity Utilization 65.9%

ICU Level of Service C

Analysis Period (min) 15

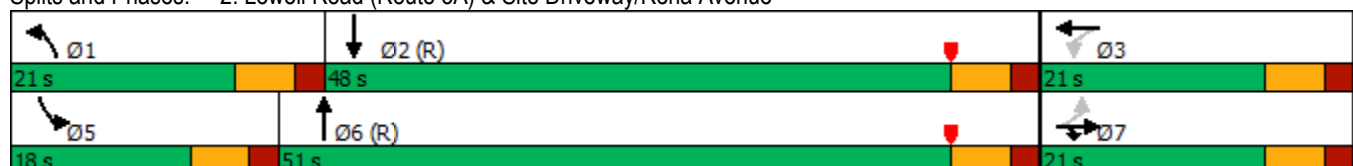
Description: NHDOT Int. No.: S-229-03

# 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



### 3: Lowell Road (Route 3A) & Sam's Club Driveway/Walmart Driveway Lanes, Volumes, Timings

2024 Build AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 			 			 	 		 	 	
Traffic Volume (vph)	135	4	58	16	5	75	65	1268	28	89	1163	95
Future Volume (vph)	135	4	58	16	5	75	65	1268	28	89	1163	95
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
Fr <sub>t</sub>			0.850			0.850			0.850			0.850
Fl <sub>t</sub> Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3019	1852	1568	3502	1900	1589	3467	3505	1583	3433	3539	1313
Fl <sub>t</sub> Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3019	1852	1568	3502	1900	1589	3467	3505	1583	3433	3539	1313
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	0.90	0.90	0.90	0.90	0.90	0.90	0.96	0.96	0.96
Heavy Vehicles (%)	16%	6%	3%	0%	0%	5%	1%	3%	2%	2%	2%	23%
Adj. Flow (vph)	145	4	62	18	6	83	72	1409	31	93	1211	99
Shared Lane Traffic (%)												
Lane Group Flow (vph)	145	4	62	18	6	83	72	1409	31	93	1211	99
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)	10.0	15.0	15.0	7.0	6.9	6.9	8.2	45.4	45.4	8.8	45.9	45.9
Actuated g/C Ratio	0.11	0.17	0.17	0.08	0.08	0.08	0.09	0.50	0.50	0.10	0.51	0.51
v/c Ratio	0.44	0.01	0.15	0.07	0.04	0.29	0.23	0.80	0.03	0.28	0.67	0.13
Control Delay	41.4	34.0	0.8	38.8	38.8	2.5	48.2	19.7	0.1	48.5	19.1	0.5
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	41.4	34.0	0.8	38.8	38.8	2.5	48.2	19.7	0.1	48.5	19.1	0.5
LOS	D	C	A	D	D	A	D	B	A	D	B	A

### 3: Lowell Road (Route 3A) & Sam's Club Driveway/Walmart Driveway Lanes, Volumes, Timings

2024 Build AM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay	29.3			10.6			20.6			19.8		
Approach LOS	C			B			C			B		
Queue Length 50th (ft)	40	2	0	5	3	0	21	336	0	26	331	0
Queue Length 95th (ft)	69	12	0	15	15	0	m38	#550	m0	m41	426	m1
Internal Link Dist (ft)	321			369			900			1109		
Turn Bay Length (ft)	175		175	150		200	350		175	350		
Base Capacity (vph)	368	316	419	428	211	338	385	1769	889	386	1806	759
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	0.39	0.01	0.15	0.04	0.03	0.25	0.19	0.80	0.03	0.24	0.67	0.13

#### 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: 0.80  
 Intersection Signal Delay: 20.5  
 Intersection LOS: C  
 Intersection Capacity Utilization 58.9%  
 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



#### 4: Lowell Road (Route 3A) & Sagamore Bridge Road Lanes, Volumes, Timings

2024 Build AM



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	993	1044	1078	386	380	1557
Future Volume (vph)	993	1044	1078	386	380	1557
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
Fr <sub>t</sub>		0.850				0.850
Fl <sub>t</sub> Protected	0.950		0.950			
Satd. Flow (prot)	3662	1656	3367	3539	3539	2760
Fl <sub>t</sub> Permitted	0.950		0.950			
Satd. Flow (perm)	3662	1656	3367	3539	3539	2760
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		801				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)	1056	1111	1172	420	413	1692
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1056	1111	1172	420	413	1692
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)	29.1	90.0	23.2	47.9	16.8	90.0
Actuated g/C Ratio	0.32	1.00	0.26	0.53	0.19	1.00
v/c Ratio	0.89	0.67	1.35	0.22	0.63	0.61
Control Delay	41.1	2.2	191.0	3.2	37.9	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.1	2.2	191.0	3.2	37.9	1.0
LOS	D	A	F	A	D	A

# 4: Lowell Road (Route 3A) & Sagamore Bridge Road Lanes, Volumes, Timings

2024 Build AM

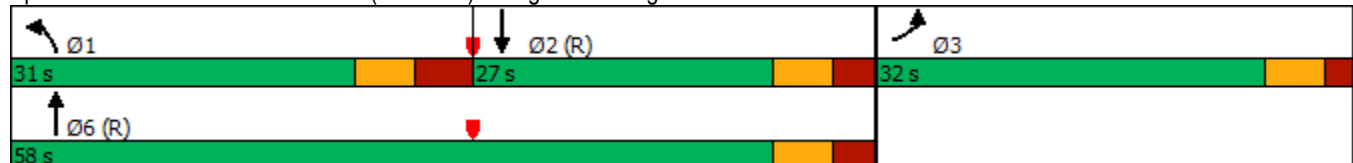


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Approach Delay	21.2			141.5	8.3	
Approach LOS	C			F	A	
Queue Length 50th (ft)	294	0	~441	5	113	0
Queue Length 95th (ft)	#447	0	#567	m5	156	0
Internal Link Dist (ft)	849			1109	919	
Turn Bay Length (ft)			525			200
Base Capacity (vph)	1183	1656	866	2005	786	2760
Starvation 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	0.67	1.35	0.21	0.53	0.61

## 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: 1.35  
 Intersection Signal Delay: 49.2  
 Intersection LOS: D  
 Intersection Capacity Utilization 86.3%  
 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





5: Lowell Road (Route 3A) & Flagstone Drive/Wason Road  
Lanes, Volumes, Timings

2024 Build AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	63	28	287	626	42	30	322	848	192	16	1106	10
Future Volume (vph)	63	28	287	626	42	30	322	848	192	16	1106	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		0.967		0.950	0.958		0.950			0.950		
Satd. Flow (prot)	0	1837	1583	1641	1657	1501	1787	3539	1583	1752	5078	0
Flt Permitted		0.967		0.950	0.958		0.950			0.950		
Satd. Flow (perm)	0	1837	1583	1641	1657	1501	1787	3539	1583	1752	5078	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			53			89			202			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	0.90	0.90	0.90	0.94	0.94	0.94	0.95	0.95	0.95	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	2%	1%	0%	4%	1%	2%	2%	3%	2%	6%
Adj. Flow (vph)	70	31	319	666	45	32	339	893	202	18	1229	11
Shared Lane Traffic (%)				47%								
Lane Group Flow (vph)	0	101	319	353	358	32	339	893	202	18	1240	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)		13.5	45.4	39.2	39.2	46.0	25.7	70.4	115.7	6.8	48.6	
Actuated g/C Ratio		0.09	0.30	0.26	0.26	0.30	0.17	0.46	0.76	0.04	0.32	
v/c Ratio		0.62	0.63	0.83	0.84	0.06	1.12	0.54	0.16	0.23	0.76	
Control Delay		87.4	47.1	72.0	72.2	0.2	143.9	33.1	1.0	85.6	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	47.1	72.0	72.2	0.2	143.9	33.1	1.0	85.6	50.3	
LOS		F	D	E	E	A	F	C	A	F	D	

# 5: Lowell Road (Route 3A) & Flagstone Drive/Wason Road Lanes, Volumes, Timings

2024 Build AM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		56.8			69.0			54.8				50.8
Approach LOS		E			E			D				D
Queue Length 50th (ft)		98	232	346	351	0	~396	345	0	18	406	
Queue Length 95th (ft)		188	411	562	568	0	#759	495	22	53	526	
Internal Link Dist (ft)		725			506			919			1435	
Turn Bay Length (ft)			250	200		75	575		275	175		
Base Capacity (vph)		249	510	556	561	597	302	1819	1354	178	2238	
Starvation Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio		0.41	0.63	0.63	0.64	0.05	1.12	0.49	0.15	0.10	0.55	

## Intersection Summary

Area Type:	Other
Cycle Length:	184
Actuated Cycle Length:	151.6
Natural Cycle:	90
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	1.12
Intersection Signal Delay:	56.4
Intersection LOS:	E
Intersection Capacity Utilization	79.5%
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: 5: Lowell Road (Route 3A) & Flagstone Drive/Wason Road



# 6: Lowell Road (Route 3A) & Hampshire Drive/Oblate Drive

## Lanes, Volumes, Timings

2024 Build AM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕	↗	↗	↕↗		↗	↕↗	
Traffic Volume (vph)	8	0	12	2	2	4	124	809	2	2	1168	60
Future Volume (vph)	8	0	12	2	2	4	124	809	2	2	1168	60
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	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	0%	11%	0%	0%	0%	3%	3%	0%	0%	3%	3%
Adj. Flow (vph)	9	0	13	2	2	4	138	899	2	2	1298	67
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	9	13	0	4	4	138	901	0	2	1365	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)		7.2	12.2		6.3	7.5	10.7	60.2		5.1	41.3	
Actuated g/C Ratio		0.10	0.18		0.09	0.11	0.16	0.87		0.07	0.60	
v/c Ratio		0.05	0.04		0.02	0.02	0.51	0.29		0.02	0.65	
Control Delay		38.5	0.2		41.5	0.0	40.0	4.3		43.0	12.9	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		38.5	0.2		41.5	0.0	40.0	4.3		43.0	12.9	
LOS		D	A		D	A	D	A		D	B	

# 6: Lowell Road (Route 3A) & Hampshire Drive/Oblate Drive Lanes, Volumes, Timings

2024 Build AM

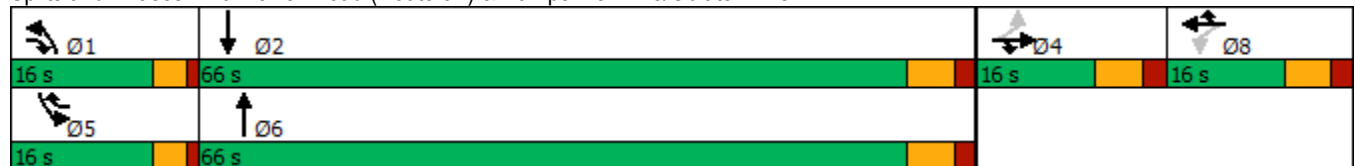


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		15.9			20.8			9.0				13.0
Approach LOS		B			C			A				B
Queue Length 50th (ft)		2	0		1	0	36	0		1		118
Queue Length 95th (ft)		22	0		14	0	#190	211		10		448
Internal Link Dist (ft)		415			302			1435				1711
Turn Bay Length (ft)			100			100	225			225		
Base Capacity (vph)		289	364		314	368	336	3056		335		2985
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		0.03	0.04		0.01	0.01	0.41	0.29		0.01		0.46

## Intersection Summary























Area Type:	Other
Cycle Length:	114
Actuated Cycle Length:	69
Natural Cycle:	60
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.65
Intersection Signal Delay:	11.3
Intersection LOS:	B
Intersection Capacity Utilization	61.0%
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



7: Lowell Road (Route 3A) & Executive Drive  
Lanes, Volumes, Timings

2024 Build AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	39	2	15	148	32	106	179	467	63	112	1065	207
Future Volume (vph)	39	2	15	148	32	106	179	467	63	112	1065	207
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		0.982			0.976	
Flt Protected		0.954			0.961		0.950			0.950		
Satd. Flow (prot)	0	1572	1558	0	1811	1620	1711	3413	0	1728	3454	0
Flt Permitted		0.484			0.734		0.950			0.950		
Satd. Flow (perm)	0	798	1558	0	1383	1620	1711	3413	0	1728	3454	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			30			101		22			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	0.90	0.90	0.90	0.90	0.90	0.90	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)	43	2	17	164	36	118	197	513	69	123	1170	227
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	45	17	0	200	118	197	582	0	123	1397	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)		11.9	25.4		15.2	15.2	10.2	46.9		9.4	46.0	
Actuated g/C Ratio		0.13	0.28		0.17	0.17	0.11	0.52		0.10	0.51	
v/c Ratio		0.43	0.04		0.86	0.33	1.02	0.32		0.68	0.78	
Control Delay		50.1	4.7		71.0	13.4	113.1	12.3		62.2	20.7	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		50.1	4.7		71.0	13.4	113.1	12.3		62.2	20.7	
LOS		D	A		E	B	F	B		E	C	

# 7: Lowell Road (Route 3A) & Executive Drive Lanes, Volumes, Timings

2024 Build AM

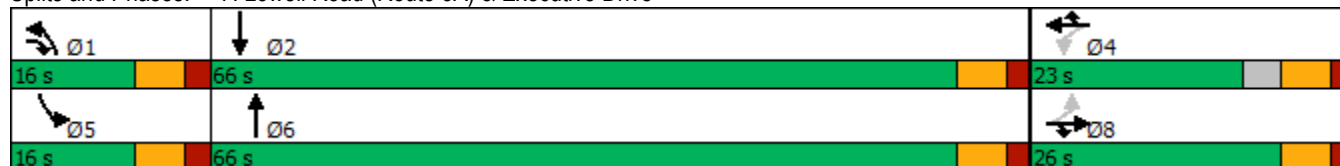


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		37.7			49.6			37.8				24.0
Approach LOS		D			D			D				C
Queue Length 50th (ft)		23	0		112	8	~127	95		70		325
Queue Length 95th (ft)		64	10		#267	61	#305	128		#175		405
Internal Link Dist (ft)		412			497			1711				1088
Turn Bay Length (ft)			225			80	350			150		
Base Capacity (vph)		181	534		314	446	194	2335		196		2367
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		0.25	0.03		0.64	0.26	1.02	0.25		0.63		0.59

## Intersection Summary

Area Type:	Other
Cycle Length:	108
Actuated Cycle Length:	89.8
Natural Cycle:	75
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	1.02
Intersection Signal Delay:	31.4
Intersection LOS:	C
Intersection Capacity Utilization	77.5%
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: 7: Lowell Road (Route 3A) & Executive Drive



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

## Lanes, Volumes, Timings

2024 Build AM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	0	50	6	0	11	4	583	1	17	1334	3
Future Volume (vph)	12	0	50	6	0	11	4	583	1	17	1334	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		0.769			0.769		0.950			0.950		
Satd. Flow (perm)	0	1392	1583	0	1510	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	0.90	0.90	0.90	0.90	0.90	0.90	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)	13	0	56	7	0	12	4	641	1	18	1404	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	13	56	0	7	12	4	641	1	18	1407	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)		6.2	6.2		6.2	16.1	5.0	151.1	151.1	6.1	156.6	
Actuated g/C Ratio		0.03	0.03		0.03	0.09	0.03	0.84	0.84	0.03	0.87	
v/c Ratio		0.28	0.39		0.14	0.06	0.08	0.43	0.00	0.30	0.87	
Control Delay		98.4	10.4		89.2	0.5	89.0	8.3	0.0	96.5	17.8	

# 8: Lowell Road (Route 3A) & Fox Hollow Drive/Nottingham Square Driveway Lanes, Volumes, Timings

2024 Build AM

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	



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

## Lanes, Volumes, Timings

2024 Build AM

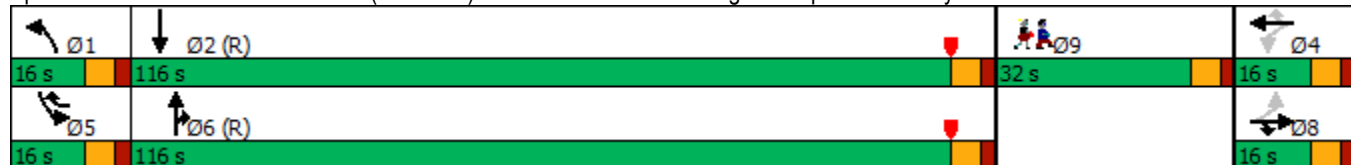


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	18.8	
Total Delay		98.4	10.4		89.2	0.5	89.0	8.3	0.0	96.5	36.6	
LOS		F	B		F	A	F	A	A	F	D	
Approach Delay		27.0			33.2			8.8			37.3	
Approach LOS		C			C			A			D	
Queue Length 50th (ft)		15	0		8	0	5	164	0	21	471	
Queue Length 95th (ft)		42	10		27	0	20	541	0	52	#2229	
Internal Link Dist (ft)		518			182			1325			469	
Turn Bay Length (ft)			50			100	210		325	125		
Base Capacity (vph)		77	173		83	233	96	1482	1370	100	1621	
Starvation Cap Reductn		0	0		0	0	0	0	0	0	251	
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		0.17	0.32		0.08	0.05	0.04	0.43	0.00	0.18	1.03	

### 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: 0.87  
 Intersection Signal Delay: 28.4  
 Intersection LOS: C  
 Intersection Capacity Utilization 93.7%  
 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



# 8: Lowell Road (Route 3A) & Fox Hollow Drive/Nottingham Square Driveway Lanes, Volumes, Timings

2024 Build AM












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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	

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# 9: Lowell Road (Route 3A) & Pelham Road Lanes, Volumes, Timings

2024 Build AM

							Ø9
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations							
Traffic Volume (vph)	236	75	515	86	65	1120	
Future Volume (vph)	236	75	515	86	65	1120	
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	
Fr <sub>t</sub>		0.850	0.981				
Fl <sub>t</sub> Protected	0.950				0.950		
Satd. Flow (prot)	1787	802	1839	0	1719	1863	
Fl <sub>t</sub> Permitted	0.950				0.950		
Satd. Flow (perm)	1787	802	1839	0	1719	1863	
Right Turn on Red		Yes		Yes			
Satd. Flow (RTOR)		29	7				
Link Speed (mph)	20		30			30	
Link Distance (ft)	512		549			1309	
Travel Time (s)	17.5		12.5			29.8	
Peak Hour Factor	0.90	0.90	0.92	0.92	0.96	0.96	
Heavy Vehicles (%)	1%	6%	5%	3%	5%	2%	
Adj. Flow (vph)	262	83	560	93	68	1167	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	262	83	653	0	68	1167	
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	1.39	0.51	0.49		1.08	0.79	
Control Delay	261.9	57.8	14.5		214.6	18.1	

# 9: Lowell Road (Route 3A) & Pelham Road Lanes, Volumes, Timings

2024 Build AM

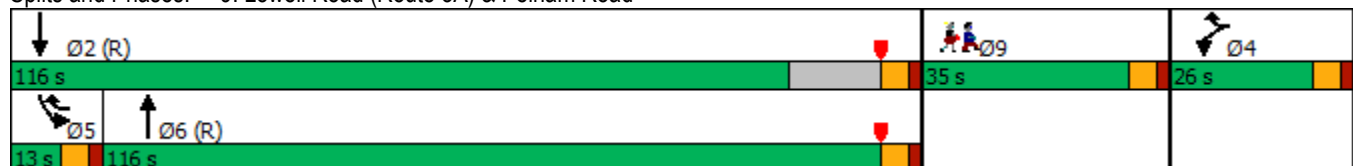


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø9
Queue Delay	0.0	0.0	4.4		0.0	0.0	
Total Delay	261.9	57.8	18.9		214.6	18.1	
LOS	F	E	B		F	B	
Approach Delay	212.8		18.9			29.0	
Approach LOS	F		B			C	
Queue Length 50th (ft)	~434	62	271		~94	564	
Queue Length 95th (ft)	#636	129	648		#213	#1726	
Internal Link Dist (ft)	432		469			1229	
Turn Bay Length (ft)		75			150		
Base Capacity (vph)	188	163	1337		63	1480	
Starvation Cap Reductn	0	0	593		0	0	
Spillback Cap Reductn	0	0	0		0	0	
Storage Cap Reductn	0	0	0		0	0	
Reduced v/c Ratio	1.39	0.51	0.88		1.08	0.79	

## 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:	1.39
Intersection Signal Delay:	54.4
Intersection LOS:	D
Intersection Capacity Utilization	82.0%
ICU Level of Service	E
Analysis Period (min)	15
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

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



**2024 Build Weekday P.M.**

1: River Road (Route 3A)/Lowell Road (Route 3A) & Dracut Road & Steele Road  
Lanes, Volumes, Timings

2024 Build PM



Lane Group	EBL	EBR	EBR2	NBL	NBT	NBR	SBL	SBT	SBR	NWL2	NWL	NWR
Lane Configurations												
Traffic Volume (vph)	37	2	2	1	605	1	902	409	14	4	0	666
Future Volume (vph)	37	2	2	1	605	1	902	409	14	4	0	666
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
Fr <sub>t</sub>		0.850						0.995				0.850
Fl <sub>t</sub> Protected	0.950			0.950			0.950				0.950	
Satd. Flow (prot)	1668	1507	0	1685	3610	0	1685	3558	0	0	1805	1615
Fl <sub>t</sub> 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				273
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	0.90	0.90	0.90	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)	41	2	2	1	665	1	1002	454	16	4	0	732
Shared Lane Traffic (%)												
Lane Group Flow (vph)	41	4	0	1	666	0	1002	470	0	0	4	732
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)	8.4	8.4		5.6	25.5		53.9	83.0			10.5	65.6
Actuated g/C Ratio	0.07	0.07		0.05	0.21		0.45	0.69			0.09	0.55
v/c Ratio	0.35	0.01		0.01	0.87		1.33	0.19			0.03	0.73
Control Delay	60.7	0.0		55.0	58.6		172.8	0.9			51.0	16.2
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Total Delay	60.7	0.0		55.0	58.6		172.8	0.9			51.0	16.2
LOS	E	A		D	E		F	A			D	B

# 1: River Road (Route 3A)/Lowell Road (Route 3A) & Dracut Road & Steele Road Lanes, Volumes, Timings

2024 Build PM

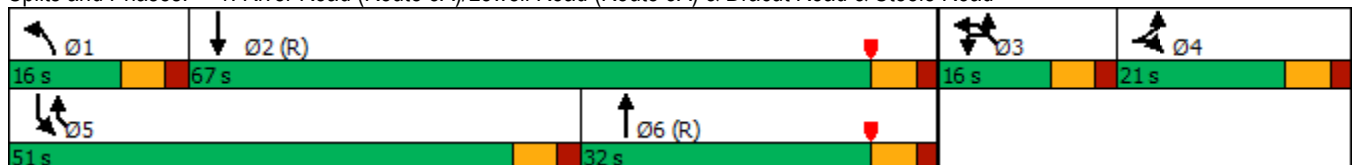


Lane Group	EBL	EBR	EBR2	NBL	NBT	NBR	SBL	SBT	SBR	NWL2	NWL	NWR
Approach Delay	55.3				58.6			117.9			16.4	
Approach LOS	E				E			F			B	
Queue Length 50th (ft)	31	0		1	262		~1009	2			3	172
Queue Length 95th (ft)	67	0		7	#354		#1305	m38			15	374
Internal Link Dist (ft)	511				678			1653			542	
Turn Bay Length (ft)		50		200			775				100	
Base Capacity (vph)	208	355		140	782		756	2462			158	1006
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	0.20	0.01		0.01	0.85		1.33	0.19			0.03	0.73

## 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: 1.33  
 Intersection Signal Delay: 77.8      Intersection LOS: E  
 Intersection Capacity Utilization 95.1%      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



## 2: Lowell Road (Route 3A) & Site Driveway/Rena Avenue Lanes, Volumes, Timings

2024 Build PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	288	0	56	1	0	16	40	1279	5	24	1260	242
Future Volume (vph)	288	0	56	1	0	16	40	1279	5	24	1260	242
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				0.976
Flt Protected		0.950			0.997		0.950			0.950		
Satd. Flow (prot)	0	1685	1507	0	1707	0	1685	3606	0	1805	3523	0
Flt Permitted		0.745			0.985		0.950			0.950		
Satd. Flow (perm)	0	1321	1507	0	1686	0	1685	3606	0	1805	3523	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			82		82							24
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	0.90	0.90	0.90	0.90	0.90	0.90	0.93	0.93	0.93	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	320	0	62	1	0	18	43	1375	5	27	1400	269
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	320	62	0	19	0	43	1380	0	27	1669	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		9.5	72.8		8.3	69.0	
Actuated g/C Ratio		0.22	0.22		0.12		0.08	0.61		0.07	0.58	
v/c Ratio		1.12	0.16		0.07		0.33	0.63		0.22	0.82	
Control Delay		132.5	5.5		0.5		66.8	15.8		58.0	14.6	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		132.5	5.5		0.5		66.8	15.8		58.0	14.6	
LOS		F	A		A		E	B		E	B	



## 2: Lowell Road (Route 3A) & Site Driveway/Rena Avenue Lanes, Volumes, Timings

2024 Build PM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		111.9			0.5			17.4				15.2
Approach LOS		F			A			B				B
Queue Length 50th (ft)		~285	0		0		34	507		22		101
Queue Length 95th (ft)		#467	24		0		m41	612		m29		279
Internal Link Dist (ft)		430			477			1653				900
Turn Bay Length (ft)			50				300			350		
Base Capacity (vph)		286	390		429		294	2188		315		2036
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		1.12	0.16		0.04		0.15	0.63		0.09		0.82

### 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: 1.12

Intersection Signal Delay: 26.5

Intersection LOS: C

Intersection Capacity Utilization 75.2%

ICU Level of Service D

Analysis Period (min) 15

Description: NHDOT Int. No.: S-229-03

~ Volume exceeds capacity, queue is theoretically infinite.

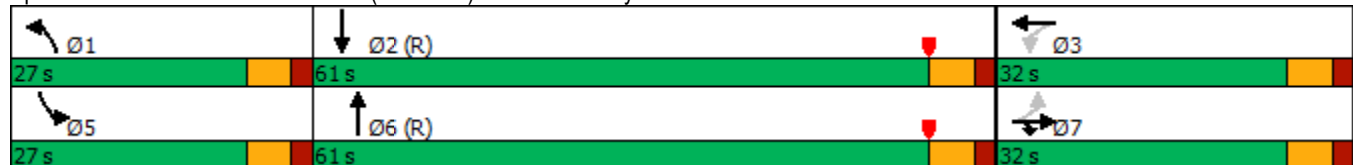
Queue shown is maximum after two cycles.

# 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



### 3: Lowell Road (Route 3A) & Sam's Club Driveway/Walmart Driveway Lanes, Volumes, Timings

2024 Build PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 		 	 		 	 	 	 	 	 	
Traffic Volume (vph)	282	14	119	92	21	256	100	1417	78	326	1328	228
Future Volume (vph)	282	14	119	92	21	256	100	1417	78	326	1328	228
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
Fr <sub>t</sub>			0.850			0.850			0.850			0.850
Fl <sub>t</sub> Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3335	1963	1615	3502	1900	1669	3467	3574	1615	3502	3539	1538
Fl <sub>t</sub> Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3335	1963	1615	3502	1900	1669	3467	3574	1615	3502	3539	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			136			237			136			177
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	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.91	0.91	0.91
Heavy Vehicles (%)	5%	0%	0%	0%	0%	0%	1%	1%	0%	0%	2%	5%
Adj. Flow (vph)	313	16	132	102	23	284	111	1574	87	358	1459	251
Shared Lane Traffic (%)												
Lane Group Flow (vph)	313	16	132	102	23	284	111	1574	87	358	1459	251
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)	17.0	17.6	17.6	9.8	10.4	10.4	10.2	50.8	50.8	17.8	58.4	58.4
Actuated g/C Ratio	0.14	0.15	0.15	0.08	0.09	0.09	0.08	0.42	0.42	0.15	0.49	0.49
v/c Ratio	0.66	0.06	0.38	0.36	0.14	0.79	0.38	1.04	0.11	0.69	0.85	0.30
Control Delay	55.6	41.9	9.7	55.1	50.7	27.1	58.1	56.4	1.2	59.5	27.9	3.3
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	55.6	41.9	9.7	55.1	50.7	27.1	58.1	56.4	1.2	59.5	27.9	3.3
LOS	E	D	A	E	D	C	E	E	A	E	C	A

### 3: Lowell Road (Route 3A) & Sam's Club Driveway/Walmart Driveway Lanes, Volumes, Timings

2024 Build PM

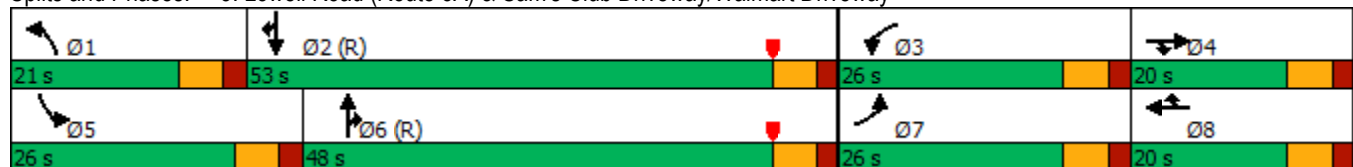


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		42.0			35.4			53.8				30.4
Approach LOS		D			D			D				C
Queue Length 50th (ft)	119	11	0	39	17	35	43	~681	0	139	558	2
Queue Length 95th (ft)	163	31	51	67	42	128	m64	m#882	m6	m144	#769	m30
Internal Link Dist (ft)		321			369			900				1109
Turn Bay Length (ft)	175		175	150		200	350		175	350		
Base Capacity (vph)	555	294	358	583	221	404	433	1512	762	584	1721	839
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	0.56	0.05	0.37	0.17	0.10	0.70	0.26	1.04	0.11	0.61	0.85	0.30

#### 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: 1.04  
 Intersection Signal Delay: 40.8  
 Intersection LOS: D  
 Intersection Capacity Utilization 78.2%  
 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



#### 4: Lowell Road (Route 3A) & Sagamore Bridge Road Lanes, Volumes, Timings

2024 Build PM



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	1521	1434	1289	686	502	1285
Future Volume (vph)	1521	1434	1289	686	502	1285
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
Fr <sub>t</sub>		0.850				0.850
Fl <sub>t</sub> Protected	0.950		0.950			
Satd. Flow (prot)	3698	1689	3467	3610	3610	2814
Fl <sub>t</sub> Permitted	0.950		0.950			
Satd. Flow (perm)	3698	1689	3467	3610	3610	2814
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		604				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	0.90	0.90
Heavy Vehicles (%)	1%	2%	1%	0%	0%	1%
Adj. Flow (vph)	1584	1494	1371	730	558	1428
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1584	1494	1371	730	558	1428
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)	44.7	120.0	32.0	62.3	22.3	120.0
Actuated g/C Ratio	0.37	1.00	0.27	0.52	0.19	1.00
v/c Ratio	1.15	0.88	1.48	0.39	0.83	0.51
Control Delay	111.7	7.8	246.1	8.5	58.9	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	111.7	7.8	246.1	8.5	58.9	0.7
LOS	F	A	F	A	E	A

# 4: Lowell Road (Route 3A) & Sagamore Bridge Road Lanes, Volumes, Timings

2024 Build PM

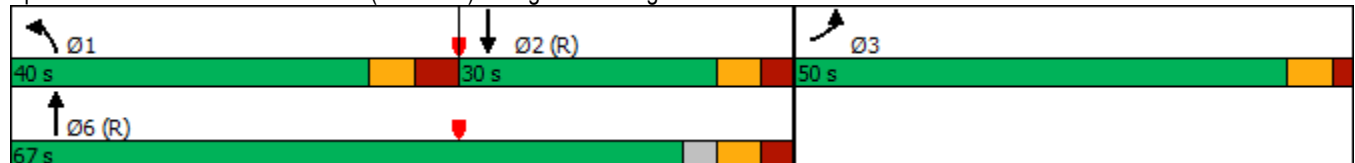


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Approach Delay	61.3			163.5	17.0	
Approach LOS	E			F	B	
Queue Length 50th (ft)	~752	0	~754	124	219	0
Queue Length 95th (ft)	#889	0	m#756	m103	#287	0
Internal Link Dist (ft)	849			1109	919	
Turn Bay Length (ft)			525			200
Base Capacity (vph)	1377	1689	924	1895	691	2814
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	1.15	0.88	1.48	0.39	0.81	0.51

## 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: 1.48  
 Intersection Signal Delay: 79.0  
 Intersection LOS: E  
 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



5: Lowell Road (Route 3A) & Flagstone Drive/Wason Road  
Lanes, Volumes, Timings

2024 Build PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	52	93	441	443	18	28	146	1075	1008	74	935	5
Future Volume (vph)	52	93	441	443	18	28	146	1075	1008	74	935	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)			54			89			308			
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	0.90	0.90	0.90	0.90	0.90	0.90	0.94	0.94	0.94	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	1%	0%	0%	1%	1%	1%	0%	0%	1%	0%
Adj. Flow (vph)	58	103	490	492	20	31	155	1144	1072	82	1039	6
Shared Lane Traffic (%)				48%								
Lane Group Flow (vph)	0	161	490	256	256	31	155	1144	1072	82	1045	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)		17.3	49.3	42.0	42.0	53.6	25.8	56.9	105.1	11.6	42.8	
Actuated g/C Ratio		0.11	0.32	0.28	0.28	0.35	0.17	0.37	0.69	0.08	0.28	
v/c Ratio		0.76	0.89	0.56	0.56	0.05	0.51	0.86	0.89	0.60	0.73	
Control Delay		91.7	64.7	54.0	53.8	0.2	70.2	53.4	23.9	91.8	53.1	
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.9	0.0	0.0	
Total Delay		91.7	64.7	54.0	53.8	0.2	70.2	53.4	25.8	91.8	53.1	
LOS		F	E	D	D	A	E	D	C	F	D	

# 5: Lowell Road (Route 3A) & Flagstone Drive/Wason Road Lanes, Volumes, Timings

2024 Build PM

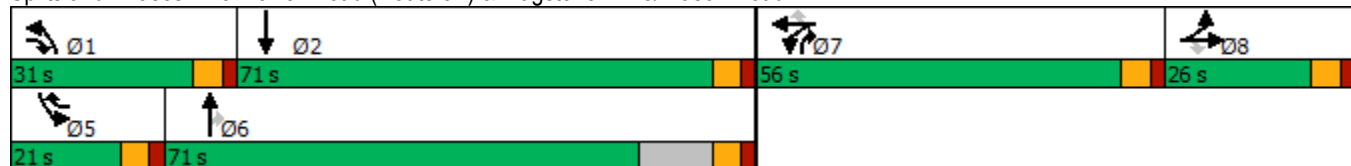


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		71.4			50.8			42.0				55.9
Approach LOS		E			D			D				E
Queue Length 50th (ft)		170	469	243	243	0	158	608	658	87	372	
Queue Length 95th (ft)		#290	#751	366	366	0	253	730	1028	155	430	
Internal Link Dist (ft)		725			506			919				1435
Turn Bay Length (ft)			250	200		75	575		275	175		
Base Capacity (vph)		252	552	560	563	637	301	1811	1290	182	2253	
Starvation Cap Reductn		0	0	0	0	0	0	0	103	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		0.64	0.89	0.46	0.45	0.05	0.51	0.63	0.90	0.45	0.46	

## Intersection Summary























Area Type:	Other
Cycle Length:	184
Actuated Cycle Length:	152.6
Natural Cycle:	90
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.89
Intersection Signal Delay:	50.4
Intersection LOS:	D
Intersection Capacity Utilization:	89.4%
ICU Level of Service:	E
Analysis Period (min):	15
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

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



6: Lowell Road (Route 3A) & Hampshire Drive/Oblate Drive  
Lanes, Volumes, Timings

2024 Build PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	2	107	11	1	4	18	1136	13	5	909	7
Future Volume (vph)	26	2	107	11	1	4	18	1136	13	5	909	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		0.955			0.956		0.950			0.950		
Satd. Flow (prot)	0	1814	1583	0	1877	1669	1736	3568	0	1745	3571	0
Flt Permitted		0.461					0.950			0.950		
Satd. Flow (perm)	0	876	1583	0	1963	1669	1736	3568	0	1745	3571	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			119			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	0.90	0.90	0.90	0.90	0.90	0.90	0.95	0.95	0.95	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	2%	0%	0%	0%	4%	1%	0%	0%	1%	0%
Adj. Flow (vph)	29	2	119	12	1	4	19	1196	14	6	1010	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	31	119	0	13	4	19	1210	0	6	1018	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)		8.4	16.5		6.6	9.5	5.6	38.2		5.2	31.8	
Actuated g/C Ratio		0.13	0.25		0.10	0.15	0.09	0.59		0.08	0.49	
v/c Ratio		0.28	0.24		0.07	0.01	0.13	0.58		0.04	0.58	
Control Delay		39.6	5.8		35.8	0.0	37.7	11.3		38.0	15.0	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		39.6	5.8		35.8	0.0	37.7	11.3		38.0	15.0	
LOS		D	A		D	A	D	B		D	B	



# 6: Lowell Road (Route 3A) & Hampshire Drive/Oblate Drive Lanes, Volumes, Timings

2024 Build PM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		12.8			27.4			11.7				15.1
Approach LOS		B			C			B				B
Queue Length 50th (ft)		9	0		4	0	6	95		2		121
Queue Length 95th (ft)		48	35		26	0	34	337		17		275
Internal Link Dist (ft)		415			302			1435				1711
Turn Bay Length (ft)			100			100	225			225		
Base Capacity (vph)		145	605		326	422	346	3135		347		3138
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	0.20		0.04	0.01	0.05	0.39		0.02		0.32

## Intersection Summary

Area Type:	Other
Cycle Length:	114
Actuated Cycle Length:	64.9
Natural Cycle:	60
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.58
Intersection Signal Delay:	13.3
Intersection LOS:	B
Intersection Capacity Utilization	53.5%
ICU Level of Service	A
Analysis Period (min)	15

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

Ø1 16 s	Ø2 66 s	Ø4 16 s	Ø8 16 s
Ø5 16 s	Ø6 66 s		

# 7: Lowell Road (Route 3A) & Executive Drive Lanes, Volumes, Timings

2024 Build PM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕	↗	↗	↕↗		↗	↕↗	
Traffic Volume (vph)	235	3	84	24	2	23	59	1037	7	17	748	41
Future Volume (vph)	235	3	84	24	2	23	59	1037	7	17	748	41
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			0.956		0.950			0.950		
Satd. Flow (prot)	0	1733	1742	0	1816	1620	1678	3571	0	1646	3540	0
Flt Permitted		0.707			0.682		0.950			0.950		
Satd. Flow (perm)	0	1286	1742	0	1296	1620	1678	3571	0	1646	3540	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			93			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	0.90	0.90	0.90	0.90	0.90	0.90	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)	261	3	93	27	2	26	61	1069	7	18	813	45
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	264	93	0	29	26	61	1076	0	18	858	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	33.8		13.4	13.4	7.0	34.0		5.5	25.7	
Actuated g/C Ratio		0.30	0.49		0.19	0.19	0.10	0.49		0.08	0.37	
v/c Ratio		0.69	0.10		0.12	0.07	0.36	0.61		0.14	0.65	
Control Delay		37.1	3.9		24.5	0.3	38.4	14.5		36.9	20.6	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		37.1	3.9		24.5	0.3	38.4	14.5		36.9	20.6	
LOS		D	A		C	A	D	B		D	C	

# 7: Lowell Road (Route 3A) & Executive Drive Lanes, Volumes, Timings

2024 Build PM

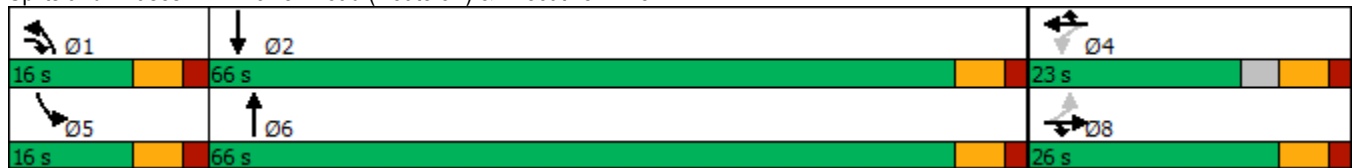


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		28.5			13.1			15.8				21.0
Approach LOS		C			B			B				C
Queue Length 50th (ft)		99	0		9	0	25	146		7		159
Queue Length 95th (ft)		#284	28		35	0	69	284		31		227
Internal Link Dist (ft)		412			497			1711				1088
Turn Bay Length (ft)			225			80	350			150		
Base Capacity (vph)		384	979		387	547	250	3072		246		3046
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		0.69	0.09		0.07	0.05	0.24	0.35		0.07		0.28

## Intersection Summary

Area Type:	Other
Cycle Length:	108
Actuated Cycle Length:	69.1
Natural Cycle:	60
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.69
Intersection Signal Delay:	19.5
Intersection LOS:	B
Intersection Capacity Utilization:	67.1%
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



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

## Lanes, Volumes, Timings

2024 Build PM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕	↗	↗	↕	↗	↗	↗	↗
Traffic Volume (vph)	9	2	26	33	0	50	28	1231	16	59	727	12
Future Volume (vph)	9	2	26	33	0	50	28	1231	16	59	727	12
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		0.960			0.950		0.950			0.950		
Satd. Flow (prot)	0	1824	1583	0	1865	1669	1745	1818	1615	1805	1878	0
Flt Permitted		0.736			0.750		0.950			0.950		
Satd. Flow (perm)	0	1398	1583	0	1473	1669	1745	1818	1615	1805	1878	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			91			56			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	0.90	0.90	0.90	0.90	0.90	0.90	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)	10	2	29	37	0	56	28	1243	16	63	773	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	12	29	0	37	56	28	1243	16	63	786	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)		8.0	8.0		8.0	20.7	6.7	140.9	140.9	8.9	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		0.19	0.18		0.57	0.23	0.44	0.87	0.01	0.71	0.51	
Control Delay		88.9	2.6		115.7	16.9	104.3	24.6	0.0	121.8	10.9	

# 8: Lowell Road (Route 3A) & Fox Hollow Drive/Nottingham Square Driveway Lanes, Volumes, Timings

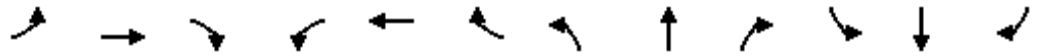
2024 Build PM

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	

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

## Lanes, Volumes, Timings

2024 Build PM

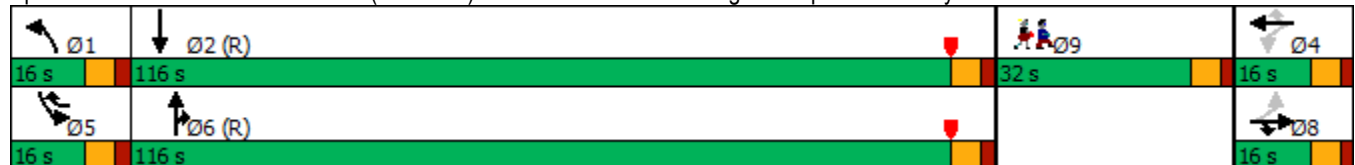


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		2.5
Total Delay		88.9	2.6		115.7	16.9	104.3	24.6	0.0	121.8		13.3
LOS		F	A		F	B	F	C	A	F		B
Approach Delay		27.8			56.2			26.0				21.4
Approach LOS		C			E			C				C
Queue Length 50th (ft)		14	0		44	0	33	830	0	74		251
Queue Length 95th (ft)		39	0		89	46	71	#1948	0	#144		750
Internal Link Dist (ft)		518			182			1325				469
Turn Bay Length (ft)			50			100	210		325	125		
Base Capacity (vph)		77	173		81	251	96	1423	1283	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		0.16	0.17		0.46	0.22	0.29	0.87	0.01	0.63		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: 0.87  
 Intersection Signal Delay: 25.6  
 Intersection LOS: C  
 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: 8: Lowell Road (Route 3A) & Fox Hollow Drive/Nottingham Square Driveway



# 8: Lowell Road (Route 3A) & Fox Hollow Drive/Nottingham Square Driveway Lanes, Volumes, Timings

2024 Build PM












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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	

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# 9: Lowell Road (Route 3A) & Pelham Road Lanes, Volumes, Timings

2024 Build PM

							Ø9
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø9
Lane Configurations							
Traffic Volume (vph)	87	145	1170	111	112	717	
Future Volume (vph)	87	145	1170	111	112	717	
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	
Fr <sub>t</sub>		0.850	0.988				
Fl <sub>t</sub> Protected	0.950				0.950		
Satd. Flow (prot)	1805	850	1922	0	1805	1881	
Fl <sub>t</sub> Permitted	0.950				0.950		
Satd. Flow (perm)	1805	850	1922	0	1805	1881	
Right Turn on Red		Yes		Yes			
Satd. Flow (RTOR)		152	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	0.90	0.90	0.98	0.98	0.90	0.90	
Heavy Vehicles (%)	0%	0%	1%	0%	0%	1%	
Adj. Flow (vph)	97	161	1194	113	124	797	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	97	161	1307	0	124	797	
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)	14.1	27.1	143.9		7.0	156.9	
Actuated g/C Ratio	0.07	0.14	0.76		0.04	0.83	
v/c Ratio	0.72	0.64	0.90		1.88	0.51	
Control Delay	114.1	23.4	28.4		487.8	9.1	



# 9: Lowell Road (Route 3A) & Pelham Road Lanes, Volumes, Timings

2024 Build PM

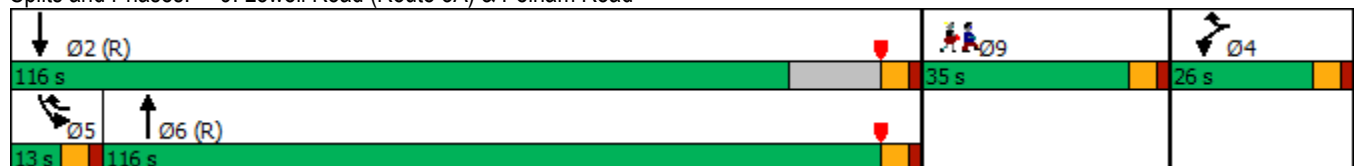


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø9
Queue Delay	0.0	0.0	46.6		0.0	0.0	
Total Delay	114.1	23.4	75.1		487.8	9.1	
LOS	F	C	E		F	A	
Approach Delay	57.5		75.1			73.6	
Approach LOS	E		E			E	
Queue Length 50th (ft)	121	10	937		~235	193	
Queue Length 95th (ft)	188	99	#2207		#390	730	
Internal Link Dist (ft)	432		469			1229	
Turn Bay Length (ft)		75			150		
Base Capacity (vph)	190	249	1456		66	1553	
Starvation Cap Reductn	0	0	308		0	0	
Spillback Cap Reductn	0	0	0		0	0	
Storage Cap Reductn	0	0	0		0	0	
Reduced v/c Ratio	0.51	0.65	1.14		1.88	0.51	

## 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 95.4%  
 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 – 2034 Build Traffic Conditions**

**2034 Build Weekday A.M.**

1: River Road (Route 3A)/Lowell Road (Route 3A) & Dracut Road & Steele Road  
Lanes, Volumes, Timings

2034 Build AM



Lane Group	EBL	EBR	EBR2	NBL	NBT	NBR	SBL	SBT	SBR	NWL	NWR
Lane Configurations											
Traffic Volume (vph)	2	0	2	0	307	0	549	575	14	1	943
Future Volume (vph)	2	0	2	0	307	0	549	575	14	1	943
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
Fr <sub>t</sub>		0.850						0.996			0.850
Fl <sub>t</sub> Protected	0.950						0.950			0.950	
Satd. Flow (prot)	1685	1133	0	1773	3574	0	1652	3561	0	1805	1583
Fl <sub>t</sub> 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)		520						3			478
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	0.90	0.90	0.90	0.90	0.90	0.90	0.92	0.92	0.92	0.90	0.90
Heavy Vehicles (%)	0%	0%	33%	0%	1%	0%	2%	1%	0%	0%	2%
Adj. Flow (vph)	2	0	2	0	341	0	597	625	15	1	1048
Shared Lane Traffic (%)											
Lane Group Flow (vph)	2	2	0	0	341	0	597	640	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)	5.7	5.7			13.3		45.6	64.8		10.7	61.1
Actuated g/C Ratio	0.06	0.06			0.15		0.51	0.72		0.12	0.68
v/c Ratio	0.02	0.00			0.65		0.71	0.25		0.00	0.85
Control Delay	40.0	0.0			42.3		20.7	0.7		36.0	15.6
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0
Total Delay	40.0	0.0			42.3		20.7	0.7		36.0	15.6
LOS	D	A			D		C	A		D	B

1: River Road (Route 3A)/Lowell Road (Route 3A) & Dracut Road & Steele Road  
Lanes, Volumes, Timings

2034 Build AM

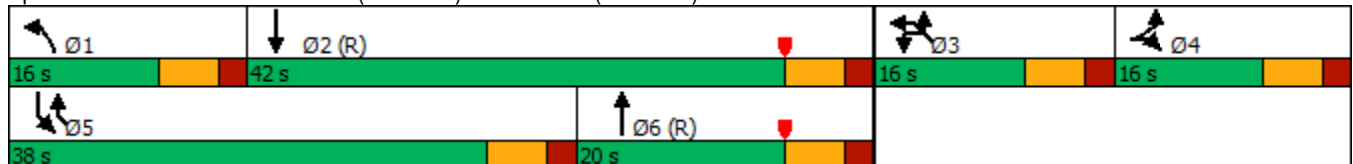


Lane Group	EBL	EBR	EBR2	NBL	NBT	NBR	SBL	SBT	SBR	NWL	NWR
Approach Delay	20.0				42.3			10.4		15.6	
Approach LOS	B				D			B		B	
Queue Length 50th (ft)	1	0			96		155	3		1	177
Queue Length 95th (ft)	8	0			142		#506	6		5	#787
Internal Link Dist (ft)	511				678			1653		542	
Turn Bay Length (ft)		50					775			100	
Base Capacity (vph)	187	588			555		836	2566		215	1228
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	0.01	0.00			0.61		0.71	0.25		0.00	0.85

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:	0.85
Intersection Signal Delay:	16.6
Intersection LOS:	B
Intersection Capacity Utilization:	76.9%
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



## 2: Lowell Road (Route 3A) & Site Driveway/Rena Avenue Lanes, Volumes, Timings

2034 Build AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	183	0	33	1	1	37	48	1255	2	8	1109	239
Future Volume (vph)	183	0	33	1	1	37	48	1255	2	8	1109	239
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
Fr <sub>t</sub>			0.850		0.871							0.973
Fl <sub>t</sub> Protected		0.950			0.999		0.950			0.950		
Satd. Flow (prot)	0	1685	1507	0	1657	0	1685	3538	0	1570	3420	0
Fl <sub>t</sub> Permitted		0.729			0.993		0.950			0.950		
Satd. Flow (perm)	0	1293	1507	0	1648	0	1685	3538	0	1570	3420	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			109		41							38
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	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.95	0.95	0.95
Heavy Vehicles (%)	0%	0%	0%	9%	0%	3%	0%	2%	20%	15%	2%	6%
Adj. Flow (vph)	203	0	37	1	1	41	53	1394	2	8	1167	252
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	203	37	0	43	0	53	1396	0	8	1419	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)		16.6	16.6		11.6		9.2	58.6		7.1	51.4	
Actuated g/C Ratio		0.18	0.18		0.13		0.10	0.65		0.08	0.57	
v/c Ratio		0.85	0.10		0.17		0.31	0.61		0.06	0.72	
Control Delay		69.0	0.5		13.1		41.6	9.6		29.6	20.5	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		69.0	0.5		13.1		41.6	9.6		29.6	20.5	
LOS		E	A		B		D	A		C	C	

## 2: Lowell Road (Route 3A) & Site Driveway/Rena Avenue Lanes, Volumes, Timings

2034 Build AM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		58.4			13.1			10.8				20.5
Approach LOS		E			B			B				C
Queue Length 50th (ft)		115	0		1		30	162		5		195
Queue Length 95th (ft)		#249	0		29		m35	288		m8		301
Internal Link Dist (ft)		430			477			1653				900
Turn Bay Length (ft)			50				300			350		
Base Capacity (vph)		238	367		308		280	2301		209		1971
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		0.85	0.10		0.14		0.19	0.61		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: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 18.9

Intersection LOS: B

Intersection Capacity Utilization 66.7%

ICU Level of Service C

Analysis Period (min) 15

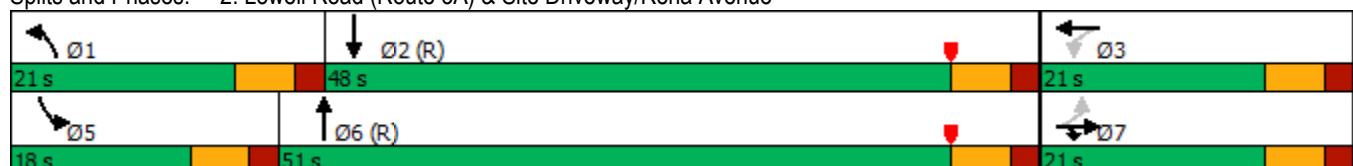
Description: NHDOT Int. No.: S-229-03

# 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



### 3: Lowell Road (Route 3A) & Sam's Club Driveway/Walmart Driveway Lanes, Volumes, Timings

2034 Build AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 		 	 		 	 	 	 	 		
Traffic Volume (vph)	146	5	64	17	6	82	72	1381	31	99	1265	102
Future Volume (vph)	146	5	64	17	6	82	72	1381	31	99	1265	102
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
Fr't			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3019	1852	1568	3502	1900	1589	3467	3505	1583	3433	3539	1313
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3019	1852	1568	3502	1900	1589	3467	3505	1583	3433	3539	1313
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	0.90	0.90	0.90	0.90	0.90	0.90	0.96	0.96	0.96
Heavy Vehicles (%)	16%	6%	3%	0%	0%	5%	1%	3%	2%	2%	2%	23%
Adj. Flow (vph)	157	5	69	19	7	91	80	1534	34	103	1318	106
Shared Lane Traffic (%)												
Lane Group Flow (vph)	157	5	69	19	7	91	80	1534	34	103	1318	106
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)	10.1	15.1	15.1	7.0	6.9	6.9	8.4	45.0	45.0	9.0	45.5	45.5
Actuated g/C Ratio	0.11	0.17	0.17	0.08	0.08	0.08	0.09	0.50	0.50	0.10	0.51	0.51
v/c Ratio	0.46	0.02	0.17	0.07	0.05	0.31	0.25	0.88	0.04	0.30	0.74	0.14
Control Delay	41.9	33.8	0.9	38.8	39.0	2.8	47.3	23.6	0.1	48.1	21.1	0.5
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	41.9	33.8	0.9	38.8	39.0	2.8	47.3	23.6	0.1	48.1	21.1	0.5
LOS	D	C	A	D	D	A	D	C	A	D	C	A



### 3: Lowell Road (Route 3A) & Sam's Club Driveway/Walmart Driveway Lanes, Volumes, Timings

2034 Build AM

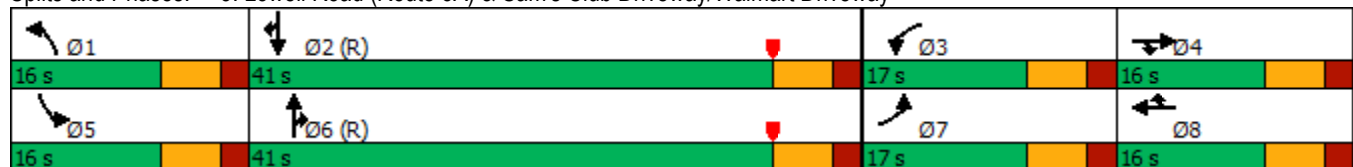


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		29.4			10.8			24.3			21.5	
Approach LOS		C			B			C			C	
Queue Length 50th (ft)	43	2	0	5	4	0	23	~377	0	29	374	0
Queue Length 95th (ft)	73	13	0	15	17	0	m39	#642	m0	m42	#507	m1
Internal Link Dist (ft)		321			369			900			1109	
Turn Bay Length (ft)	175		175	150		200	350		175	350		
Base Capacity (vph)	368	319	421	428	211	338	386	1752	882	389	1790	754
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	0.43	0.02	0.16	0.04	0.03	0.27	0.21	0.88	0.04	0.26	0.74	0.14

#### 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: 0.88  
 Intersection Signal Delay: 23.0  
 Intersection LOS: C  
 Intersection Capacity Utilization 63.2%  
 ICU Level of Service B  
 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



#### 4: Lowell Road (Route 3A) & Sagamore Bridge Road Lanes, Volumes, Timings

2034 Build AM



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	1092	1135	1173	422	416	1717
Future Volume (vph)	1092	1135	1173	422	416	1717
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
Fr <sub>t</sub>		0.850				0.850
Fl <sub>t</sub> Protected	0.950		0.950			
Satd. Flow (prot)	3662	1656	3367	3539	3539	2760
Fl <sub>t</sub> Permitted	0.950		0.950			
Satd. Flow (perm)	3662	1656	3367	3539	3539	2760
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		796				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)	1162	1207	1275	459	452	1866
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1162	1207	1275	459	452	1866
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)	28.5	90.0	23.0	48.5	17.5	90.0
Actuated g/C Ratio	0.32	1.00	0.26	0.54	0.19	1.00
v/c Ratio	1.00	0.73	1.48	0.24	0.66	0.68
Control Delay	59.7	2.9	248.2	2.8	38.1	1.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.7	2.9	248.2	2.8	38.1	1.3
LOS	E	A	F	A	D	A

# 4: Lowell Road (Route 3A) & Sagamore Bridge Road Lanes, Volumes, Timings

2034 Build AM

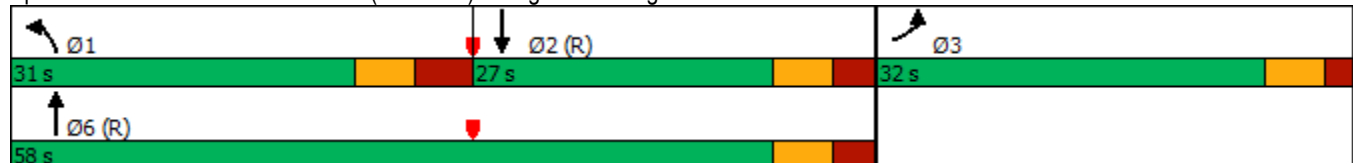


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Approach Delay	30.8			183.2	8.5	
Approach LOS	C			F	A	
Queue Length 50th (ft)	~368	0	~508	4	124	0
Queue Length 95th (ft)	#514	0	m#618	m6	171	0
Internal Link Dist (ft)	849			1109	919	
Turn Bay Length (ft)			525			200
Base Capacity (vph)	1160	1656	860	2005	786	2760
Starvation 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	1.00	0.73	1.48	0.23	0.58	0.68

## 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: 110  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.48  
 Intersection Signal Delay: 63.9  
 Intersection LOS: E  
 Intersection Capacity Utilization 92.8%  
 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.  
 m Volume for 95th percentile queue is metered by upstream signal.

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



5: Lowell Road (Route 3A) & Flagstone Drive/Wason Road  
Lanes, Volumes, Timings

2034 Build AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	29	308	690	46	34	347	934	212	17	1215	11
Future Volume (vph)	65	29	308	690	46	34	347	934	212	17	1215	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		0.967		0.950	0.958		0.950			0.950		
Satd. Flow (prot)	0	1837	1583	1641	1657	1501	1787	3539	1583	1752	5078	0
Flt Permitted		0.967		0.950	0.958		0.950			0.950		
Satd. Flow (perm)	0	1837	1583	1641	1657	1501	1787	3539	1583	1752	5078	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			53			89			223			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	0.90	0.90	0.90	0.94	0.94	0.94	0.95	0.95	0.95	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	2%	1%	0%	4%	1%	2%	2%	3%	2%	6%
Adj. Flow (vph)	72	32	342	734	49	36	365	983	223	19	1350	12
Shared Lane Traffic (%)				47%								
Lane Group Flow (vph)	0	104	342	389	394	36	365	983	223	19	1362	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)		14.2	45.7	44.0	44.0	51.0	25.5	76.3	126.4	6.9	54.9	
Actuated g/C Ratio		0.09	0.28	0.27	0.27	0.31	0.16	0.47	0.78	0.04	0.34	
v/c Ratio		0.65	0.71	0.88	0.88	0.07	1.31	0.59	0.17	0.26	0.80	
Control Delay		94.4	55.6	79.2	79.4	0.2	213.9	36.0	1.0	90.6	53.4	
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay		94.4	55.6	79.2	79.4	0.2	213.9	36.0	1.0	90.6	53.4	
LOS		F	E	E	E	A	F	D	A	F	D	

# 5: Lowell Road (Route 3A) & Flagstone Drive/Wason Road Lanes, Volumes, Timings

2034 Build AM

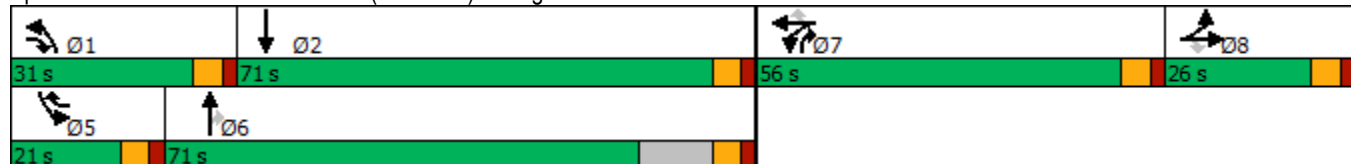


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		64.6			75.8			72.3				53.9
Approach LOS		E			E			E				D
Queue Length 50th (ft)		115	302	427	433	0	~542	444	0	21	509	
Queue Length 95th (ft)		192	452	#676	#681	0	#832	561	23	55	593	
Internal Link Dist (ft)		725			506			919				1435
Turn Bay Length (ft)			250	200		75	575		275	175		
Base Capacity (vph)		229	482	512	517	602	278	1703	1335	163	2062	
Starvation Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio		0.45	0.71	0.76	0.76	0.06	1.31	0.58	0.17	0.12	0.66	

## Intersection Summary























Area Type:	Other
Cycle Length:	184
Actuated Cycle Length:	163
Natural Cycle:	100
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	1.31
Intersection Signal Delay:	66.2
Intersection LOS:	E
Intersection Capacity Utilization	84.9%
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



6: Lowell Road (Route 3A) & Hampshire Drive/Oblate Drive  
Lanes, Volumes, Timings

2034 Build AM

												
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	136	887	2	2	1284	66
Future Volume (vph)	9	0	13	2	2	5	136	887	2	2	1284	66
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	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	0%	11%	0%	0%	0%	3%	3%	0%	0%	3%	3%
Adj. Flow (vph)	10	0	14	2	2	6	151	986	2	2	1427	73
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	10	14	0	4	6	151	988	0	2	1500	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	12.2		6.3	9.0	11.8	68.5		5.1	48.8	
Actuated g/C Ratio		0.09	0.15		0.08	0.11	0.15	0.86		0.06	0.61	
v/c Ratio		0.06	0.05		0.03	0.02	0.58	0.33		0.02	0.70	
Control Delay		44.3	0.3		47.0	0.2	48.4	5.2		48.5	15.2	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		44.3	0.3		47.0	0.2	48.4	5.2		48.5	15.2	
LOS		D	A		D	A	D	A		D	B	

# 6: Lowell Road (Route 3A) & Hampshire Drive/Oblate Drive Lanes, Volumes, Timings

2034 Build AM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		18.7			18.9			10.9				15.2
Approach LOS		B			B			B				B
Queue Length 50th (ft)		4	0		2	0	57	0		1		153
Queue Length 95th (ft)		24	0		14	0	#213	238		10		525
Internal Link Dist (ft)		415			302			1435				1711
Turn Bay Length (ft)			100			100	225			225		
Base Capacity (vph)		250	325		271	363	291	3018		289		2773
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		0.01	0.02	0.52	0.33		0.01		0.54

## Intersection Summary

Area Type: Other  
 Cycle Length: 114  
 Actuated Cycle Length: 79.5  
 Natural Cycle: 65  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.70  
 Intersection Signal Delay: 13.4  
 Intersection LOS: B  
 Intersection Capacity Utilization 65.6%  
 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



# 7: Lowell Road (Route 3A) & Executive Drive Lanes, Volumes, Timings

2034 Build AM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕	↗	↗	↕↗		↗	↕↗	
Traffic Volume (vph)	43	2	16	164	35	117	197	510	70	124	1169	229
Future Volume (vph)	43	2	16	164	35	117	197	510	70	124	1169	229
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		0.982			0.975	
Flt Protected		0.954			0.960		0.950			0.950		
Satd. Flow (prot)	0	1571	1558	0	1809	1620	1711	3413	0	1728	3451	0
Flt Permitted		0.408			0.729		0.950			0.950		
Satd. Flow (perm)	0	672	1558	0	1374	1620	1711	3413	0	1728	3451	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			30			101		22			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	0.90	0.90	0.90	0.90	0.90	0.90	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)	48	2	18	182	39	130	216	560	77	136	1285	252
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	50	18	0	221	130	216	637	0	136	1537	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		16.7	16.7	10.1	52.6		9.7	52.1	
Actuated g/C Ratio		0.15	0.30		0.17	0.17	0.10	0.54		0.10	0.54	
v/c Ratio		0.50	0.04		0.94	0.36	1.21	0.34		0.79	0.82	
Control Delay		56.8	5.1		87.1	15.3	177.6	12.6		76.2	22.6	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		56.8	5.1		87.1	15.3	177.6	12.6		76.2	22.6	
LOS		E	A		F	B	F	B		E	C	



# 7: Lowell Road (Route 3A) & Executive Drive Lanes, Volumes, Timings

2034 Build AM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		43.1			60.5			54.4				27.0
Approach LOS		D			E			D				C
Queue Length 50th (ft)		29	0		142	16	~176	106		87		385
Queue Length 95th (ft)		71	10		#292	70	#345	150		#203		506
Internal Link Dist (ft)		412			497			1711				1088
Turn Bay Length (ft)			225			80	350			150		
Base Capacity (vph)		140	504		286	417	178	2140		180		2168
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	0.04		0.77	0.31	1.21	0.30		0.76		0.71

**Intersection Summary**

Area Type: Other

Cycle Length: 108

Actuated Cycle Length: 97.2

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.21

Intersection Signal Delay: 39.3      Intersection LOS: D

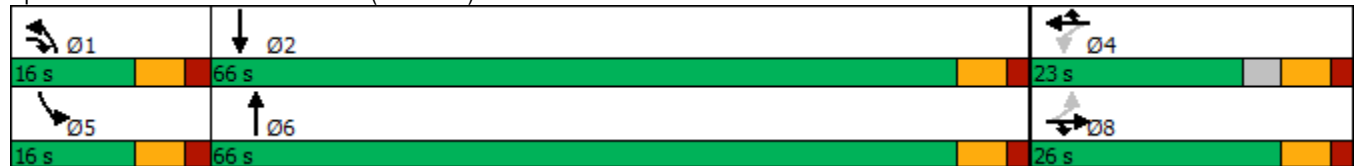
Intersection Capacity Utilization 83.1%      ICU Level of Service E

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



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

## Lanes, Volumes, Timings

2034 Build AM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕	↗	↗	↑	↗	↗	↘	↘
Traffic Volume (vph)	13	0	56	7	0	12	5	637	1	19	1467	3
Future Volume (vph)	13	0	56	7	0	12	5	637	1	19	1467	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	0.90	0.90	0.90	0.90	0.90	0.90	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	62	8	0	13	5	700	1	20	1544	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	14	62	0	8	13	5	700	1	20	1547	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	18.5	5.1	145.3	145.3	6.3	153.1	
Actuated g/C Ratio		0.04	0.04		0.04	0.10	0.03	0.81	0.81	0.04	0.85	
v/c Ratio		0.30	0.43		0.16	0.06	0.10	0.49	0.00	0.32	0.98	
Control Delay		100.2	13.6		90.1	0.5	89.8	9.8	0.0	97.4	31.0	

8: Lowell Road (Route 3A) & Fox Hollow Drive/Nottingham Square Driveway  
 Lanes, Volumes, Timings

2034 Build AM

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	

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

## Lanes, Volumes, Timings

2034 Build AM



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	36.1	
Total Delay		100.2	13.6		90.1	0.5	89.8	9.8	0.0	97.4	67.1	
LOS		F	B		F	A	F	A	A	F	E	
Approach Delay		29.6			34.6			10.3			67.5	
Approach LOS		C			C			B			E	
Queue Length 50th (ft)		17	0		9	0	6	191	0	24	750	
Queue Length 95th (ft)		45	20		30	0	23	628	0	57	#2569	
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	1425	1320	100	1584	
Starvation Cap Reductn		0	0		0	0	0	0	0	0	163	
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	0.36		0.10	0.05	0.05	0.49	0.00	0.20	1.09	

### 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: 0.98

Intersection Signal Delay: 49.0

Intersection LOS: D

Intersection Capacity Utilization 100.7%

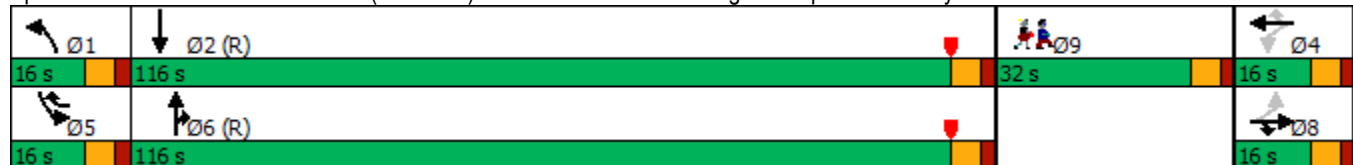
ICU Level of Service G

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



## 8: Lowell Road (Route 3A) & Fox Hollow Drive/Nottingham Square Driveway Lanes, Volumes, Timings

2034 Build AM












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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	

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# 9: Lowell Road (Route 3A) & Pelham Road Lanes, Volumes, Timings

2034 Build AM

							Ø9
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations							
Traffic Volume (vph)	261	82	563	95	72	1231	
Future Volume (vph)	261	82	563	95	72	1231	
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	
Fr <sub>t</sub>		0.850	0.981				
Fl <sub>t</sub> Protected	0.950				0.950		
Satd. Flow (prot)	1787	802	1839	0	1719	1863	
Fl <sub>t</sub> 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	0.90	0.90	0.92	0.92	0.96	0.96	
Heavy Vehicles (%)	1%	6%	5%	3%	5%	2%	
Adj. Flow (vph)	290	91	612	103	75	1282	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	290	91	715	0	75	1282	
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	1.54	0.56	0.53		1.19	0.87	
Control Delay	318.3	62.7	15.5		243.1	22.3	

# 9: Lowell Road (Route 3A) & Pelham Road Lanes, Volumes, Timings

2034 Build AM



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø9
Queue Delay	0.0	0.0	6.2		0.0	0.0	
Total Delay	318.3	62.7	21.7		243.1	22.3	
LOS	F	E	C		F	C	
Approach Delay	257.2		21.7			34.5	
Approach LOS	F		C			C	
Queue Length 50th (ft)	~506	72	313		~112	744	
Queue Length 95th (ft)	#716	144	745		#236	#2018	
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	560		0	0	
Spillback Cap Reductn	0	0	0		0	0	
Storage Cap Reductn	0	0	0		0	0	
Reduced v/c Ratio	1.54	0.56	0.92		1.19	0.87	

## 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: 1.54

Intersection Signal Delay: 65.3

Intersection LOS: E

Intersection Capacity Utilization 89.2%

ICU Level of Service E

Analysis Period (min) 15

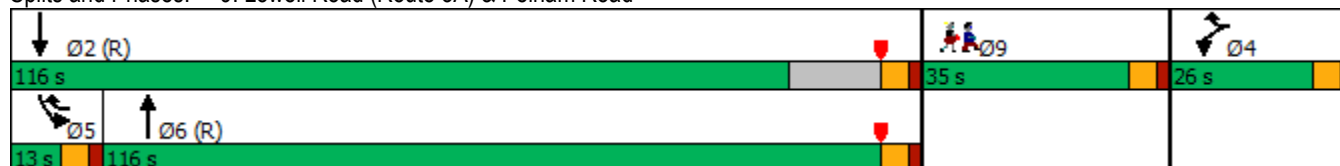
~ Volume exceeds capacity, queue is theoretically infinite.

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



**2034 Build Weekday P.M.**



1: River Road (Route 3A)/Lowell Road (Route 3A) & Dracut Road & Steele Road  
Lanes, Volumes, Timings

2034 Build PM
























Lane Group	EBL	EBR	EBR2	NBL	NBT	NBR	SBL	SBT	SBR	NWL2	NWL	NWR
Lane Configurations												
Traffic Volume (vph)	41	2	2	1	666	1	994	450	15	5	0	732
Future Volume (vph)	41	2	2	1	666	1	994	450	15	5	0	732
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
Fr <sub>t</sub>		0.850						0.995				0.850
Fl <sub>t</sub> Protected	0.950			0.950			0.950				0.950	
Satd. Flow (prot)	1668	1507	0	1685	3610	0	1685	3558	0	0	1805	1615
Fl <sub>t</sub> 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				256
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	0.90	0.90	0.90	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)	46	2	2	1	732	1	1104	500	17	5	0	804
Shared Lane Traffic (%)												
Lane Group Flow (vph)	46	4	0	1	733	0	1104	517	0	0	5	804
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	26.0		53.6	83.2			10.0	64.8
Actuated g/C Ratio	0.07	0.07		0.05	0.22		0.45	0.69			0.08	0.54
v/c Ratio	0.38	0.01		0.01	0.94		1.47	0.21			0.03	0.81
Control Delay	61.1	0.0		55.0	66.6		236.7	0.9			51.2	22.1
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Total Delay	61.1	0.0		55.0	66.6		236.7	0.9			51.2	22.1
LOS	E	A		D	E		F	A			D	C



## 2: Lowell Road (Route 3A) & Site Driveway/Rena Avenue Lanes, Volumes, Timings

2034 Build PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	293	0	58	1	0	17	40	1412	6	27	1391	243
Future Volume (vph)	293	0	58	1	0	17	40	1412	6	27	1391	243
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			0.978	
Flt Protected		0.950			0.998		0.950			0.950		
Satd. Flow (prot)	0	1685	1507	0	1709	0	1685	3606	0	1805	3531	0
Flt Permitted		0.744			0.985		0.950			0.950		
Satd. Flow (perm)	0	1319	1507	0	1686	0	1685	3606	0	1805	3531	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			82		82							22
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	0.90	0.90	0.90	0.90	0.90	0.90	0.93	0.93	0.93	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	326	0	64	1	0	19	43	1518	6	30	1546	270
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	326	64	0	20	0	43	1524	0	30	1816	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		9.5	72.7		8.5	69.0	
Actuated g/C Ratio		0.22	0.22		0.12		0.08	0.61		0.07	0.58	
v/c Ratio		1.14	0.16		0.07		0.33	0.70		0.24	0.89	
Control Delay		140.6	6.0		0.5		64.5	17.7		56.4	19.2	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		140.6	6.0		0.5		64.5	17.7		56.4	19.2	
LOS		F	A		A		E	B		E	B	

## 2: Lowell Road (Route 3A) & Site Driveway/Rena Avenue Lanes, Volumes, Timings

2034 Build PM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		118.5			0.5			19.0			19.8	
Approach LOS		F			A			B			B	
Queue Length 50th (ft)		~295	0		0		34	574		24	218	
Queue Length 95th (ft)		#479	25		0		m37	m691		m30	m#326	
Internal Link Dist (ft)		430			477			1653			900	
Turn Bay Length (ft)			50				300			350		
Base Capacity (vph)		285	390		429		294	2184		315	2040	
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		1.14	0.16		0.05		0.15	0.70		0.10	0.89	

### 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: 1.14

Intersection Signal Delay: 29.4

Intersection LOS: C

Intersection Capacity Utilization 79.1%

ICU Level of Service D

Analysis Period (min) 15

Description: NHDOT Int. No.: S-229-03

~ Volume exceeds capacity, queue is theoretically infinite.

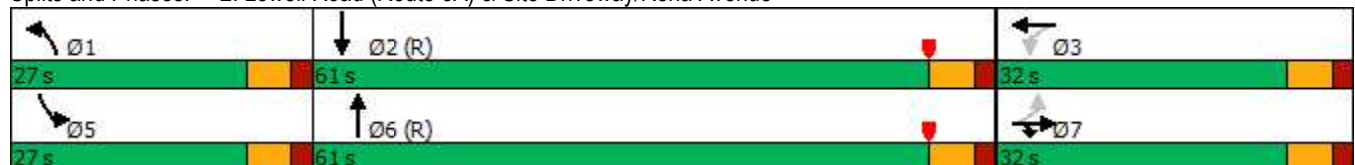
Queue shown is maximum after two cycles.

# 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



### 3: Lowell Road (Route 3A) & Sam's Club Driveway/Walmart Driveway Lanes, Volumes, Timings

2034 Build PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 		 	 		 	 	 	 	 	 	
Traffic Volume (vph)	309	15	131	102	23	283	110	1540	86	360	1441	250
Future Volume (vph)	309	15	131	102	23	283	110	1540	86	360	1441	250
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
Fr <sub>t</sub>			0.850			0.850			0.850			0.850
Fl <sub>t</sub> Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3335	1963	1615	3502	1900	1669	3467	3574	1615	3502	3539	1538
Fl <sub>t</sub> Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3335	1963	1615	3502	1900	1669	3467	3574	1615	3502	3539	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			146			231			136			179
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	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.91	0.91	0.91
Heavy Vehicles (%)	5%	0%	0%	0%	0%	0%	1%	1%	0%	0%	2%	5%
Adj. Flow (vph)	343	17	146	113	26	314	122	1711	96	396	1584	275
Shared Lane Traffic (%)												
Lane Group Flow (vph)	343	17	146	113	26	314	122	1711	96	396	1584	275
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)	17.8	19.4	19.4	10.2	11.8	11.8	10.5	47.9	47.9	18.5	55.8	55.8
Actuated g/C Ratio	0.15	0.16	0.16	0.08	0.10	0.10	0.09	0.40	0.40	0.15	0.46	0.46
v/c Ratio	0.69	0.05	0.38	0.38	0.14	0.84	0.40	1.20	0.13	0.74	0.96	0.34
Control Delay	56.2	41.3	9.8	55.2	49.8	35.5	57.6	122.0	2.7	57.8	35.9	4.2
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	56.2	41.3	9.8	55.2	49.8	35.5	57.6	122.0	2.7	57.8	35.9	4.2
LOS	E	D	A	E	D	D	E	F	A	E	D	A

### 3: Lowell Road (Route 3A) & Sam's Club Driveway/Walmart Driveway Lanes, Volumes, Timings

2034 Build PM

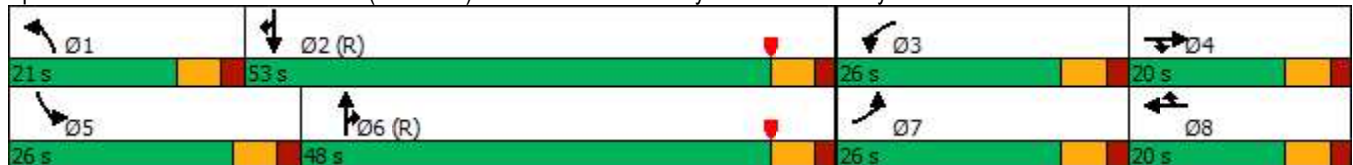


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		42.3			41.2			112.0			35.9	
Approach LOS		D			D			F			D	
Queue Length 50th (ft)	130	11	0	43	18	61	47	~880	1	139	~674	9
Queue Length 95th (ft)	179	32	57	72	47	#198	m65	m#1000	m9	m146	m#820	m31
Internal Link Dist (ft)		321			369			900			1109	
Turn Bay Length (ft)	175		175	150		200	350		175	350		
Base Capacity (vph)	555	319	384	583	221	398	433	1427	726	583	1646	811
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	0.38	0.19	0.12	0.79	0.28	1.20	0.13	0.68	0.96	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: 110  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.20  
 Intersection Signal Delay: 65.5  
 Intersection LOS: E  
 Intersection Capacity Utilization 83.9%  
 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



#### 4: Lowell Road (Route 3A) & Sagamore Bridge Road Lanes, Volumes, Timings

2034 Build PM



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔↔	↗	↔↔	↕↕	↕↕	↗↗
Traffic Volume (vph)	1677	1562	1402	752	549	1415
Future Volume (vph)	1677	1562	1402	752	549	1415
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
Fr <sub>t</sub>		0.850				0.850
Fl <sub>t</sub> Protected	0.950		0.950			
Satd. Flow (prot)	3698	1689	3467	3610	3610	2814
Fl <sub>t</sub> Permitted	0.950		0.950			
Satd. Flow (perm)	3698	1689	3467	3610	3610	2814
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		596				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	0.90	0.90
Heavy Vehicles (%)	1%	2%	1%	0%	0%	1%
Adj. Flow (vph)	1747	1627	1491	800	610	1572
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1747	1627	1491	800	610	1572
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	1.29	0.96	1.61	0.42	0.89	0.56
Control Delay	167.3	16.8	301.2	7.8	63.5	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	167.3	16.8	301.2	7.8	63.5	0.8
LOS	F	B	F	A	E	A

# 4: Lowell Road (Route 3A) & Sagamore Bridge Road Lanes, Volumes, Timings

2034 Build PM

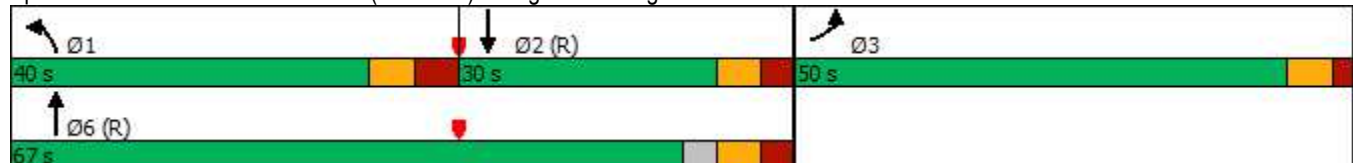


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Approach Delay	94.7			198.8	18.3	
Approach LOS	F			F	B	
Queue Length 50th (ft)	~888	0	~851	120	244	0
Queue Length 95th (ft)	#1025	#164	m#739	m103	#342	0
Internal Link Dist (ft)	849			1109	919	
Turn Bay Length (ft)			525			200
Base Capacity (vph)	1359	1689	924	1895	691	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	1.29	0.96	1.61	0.42	0.88	0.56

## 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: 1.61  
 Intersection Signal Delay: 103.9  
 Intersection LOS: F  
 Intersection Capacity Utilization 119.7%  
 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





# 5: Lowell Road (Route 3A) & Flagstone Drive/Wason Road

## Lanes, Volumes, Timings

2034 Build PM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗	↖	↕	↗	↖	↕	↗	↖	↕	↗
Traffic Volume (vph)	54	100	482	489	19	31	154	1184	1116	81	1024	5
Future Volume (vph)	54	100	482	489	19	31	154	1184	1116	81	1024	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			276			
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	0.90	0.90	0.90	0.90	0.90	0.90	0.94	0.94	0.94	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	1%	0%	0%	1%	1%	1%	0%	0%	1%	0%
Adj. Flow (vph)	60	111	536	543	21	34	164	1260	1187	90	1138	6
Shared Lane Traffic (%)				48%								
Lane Group Flow (vph)	0	171	536	282	282	34	164	1260	1187	90	1144	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	49.7	49.9	49.9	62.4	25.1	62.9	118.9	12.4	50.3	
Actuated g/C Ratio		0.11	0.30	0.30	0.30	0.37	0.15	0.37	0.71	0.07	0.30	
v/c Ratio		0.83	1.05	0.57	0.57	0.05	0.61	0.94	0.97	0.68	0.74	
Control Delay		104.0	104.2	56.9	56.8	0.2	79.6	65.0	37.9	101.6	56.3	
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.6	0.0	0.0	
Total Delay		104.0	104.2	56.9	56.8	0.2	79.6	65.0	56.5	101.6	56.3	
LOS		F	F	E	E	A	E	E	E	F	E	

# 5: Lowell Road (Route 3A) & Flagstone Drive/Wason Road Lanes, Volumes, Timings

2034 Build PM

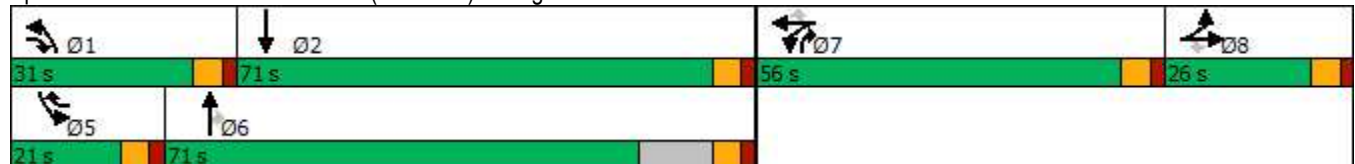


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		104.1			53.6			62.0				59.6
Approach LOS		F			D			E				E
Queue Length 50th (ft)		191	~613	289	288	0	177	721	1042	101	423	
Queue Length 95th (ft)		#323	#883	412	411	0	270	#847	#1558	170	478	
Internal Link Dist (ft)		725			506			919			1435	
Turn Bay Length (ft)			250	200		75	575		275	175		
Base Capacity (vph)		223	510	495	498	652	267	1601	1225	161	1992	
Starvation Cap Reductn		0	0	0	0	0	0	0	86	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		0.77	1.05	0.57	0.57	0.05	0.61	0.79	1.04	0.56	0.57	

## Intersection Summary

Area Type:	Other
Cycle Length:	184
Actuated Cycle Length:	168
Natural Cycle:	110
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	1.05
Intersection Signal Delay:	66.2
Intersection LOS:	E
Intersection Capacity Utilization:	96.8%
ICU Level of Service:	F
Analysis Period (min):	15
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

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



# 6: Lowell Road (Route 3A) & Hampshire Drive/Oblate Drive

## Lanes, Volumes, Timings

2034 Build PM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕	↗	↗	↕↗		↗	↕↗	
Traffic Volume (vph)	29	2	118	12	1	5	20	1249	14	6	995	8
Future Volume (vph)	29	2	118	12	1	5	20	1249	14	6	995	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		0.955			0.956		0.950			0.950		
Satd. Flow (prot)	0	1814	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	0.90	0.90	0.90	0.90	0.90	0.90	0.95	0.95	0.95	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	2%	0%	0%	0%	4%	1%	0%	0%	1%	0%
Adj. Flow (vph)	32	2	131	13	1	6	21	1315	15	7	1106	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	34	131	0	14	6	21	1330	0	7	1115	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	17.3		6.8	9.7	5.9	44.4		5.3	37.0	
Actuated g/C Ratio		0.12	0.24		0.09	0.13	0.08	0.61		0.07	0.51	
v/c Ratio		0.34	0.28		0.08	0.02	0.15	0.61		0.06	0.62	
Control Delay		47.5	6.4		40.8	0.2	42.8	12.6		43.3	15.2	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		47.5	6.4		40.8	0.2	42.8	12.6		43.3	15.2	
LOS		D	A		D	A	D	B		D	B	

# 6: Lowell Road (Route 3A) & Hampshire Drive/Oblate Drive Lanes, Volumes, Timings

2034 Build PM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		14.9			28.6			13.1				15.4
Approach LOS		B			C			B				B
Queue Length 50th (ft)		10	0		4	0	7	116		2		144
Queue Length 95th (ft)		#57	40		29	0	39	387		19		312
Internal Link Dist (ft)		415			302			1435				1711
Turn Bay Length (ft)			100			100	225			225		
Base Capacity (vph)		124	561		291	384	308	3007		310		3010
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	0.23		0.05	0.02	0.07	0.44		0.02		0.37

## Intersection Summary























Area Type:	Other
Cycle Length:	114
Actuated Cycle Length:	73.2
Natural Cycle:	60
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.62
Intersection Signal Delay:	14.3
Intersection LOS:	B
Intersection Capacity Utilization	56.6%
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



7: Lowell Road (Route 3A) & Executive Drive  
Lanes, Volumes, Timings

2034 Build PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	259	3	93	27	2	26	64	1139	8	19	817	45
Future Volume (vph)	259	3	93	27	2	26	64	1139	8	19	817	45
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			0.955		0.950			0.950		
Satd. Flow (prot)	0	1733	1742	0	1814	1620	1678	3571	0	1646	3540	0
Flt Permitted		0.705			0.650		0.950			0.950		
Satd. Flow (perm)	0	1282	1742	0	1235	1620	1678	3571	0	1646	3540	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			103			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	0.90	0.90	0.90	0.90	0.90	0.90	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)	288	3	103	30	2	29	66	1174	8	21	888	49
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	291	103	0	32	29	66	1182	0	21	937	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)		20.8	34.3		13.4	13.4	7.3	36.9		5.7	30.6	
Actuated g/C Ratio		0.28	0.46		0.18	0.18	0.10	0.50		0.08	0.41	
v/c Ratio		0.81	0.12		0.14	0.08	0.40	0.67		0.17	0.64	
Control Delay		50.0	4.5		28.5	0.4	43.1	16.6		40.7	19.7	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		50.0	4.5		28.5	0.4	43.1	16.6		40.7	19.7	
LOS		D	A		C	A	D	B		D	B	

# 7: Lowell Road (Route 3A) & Executive Drive Lanes, Volumes, Timings

2034 Build PM

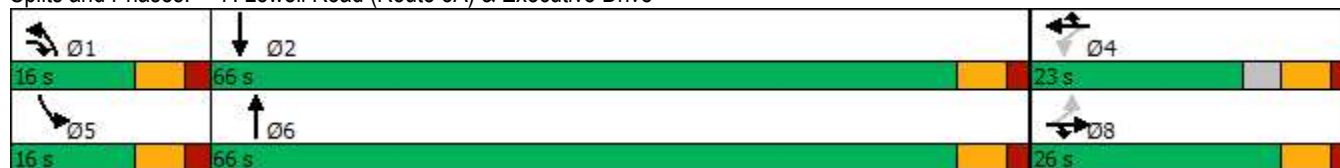


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		38.1			15.2			18.0				20.2
Approach LOS		D			B			B				C
Queue Length 50th (ft)		121	0		11	0	28	167		9		181
Queue Length 95th (ft)		#356	31		41	0	79	324		36		250
Internal Link Dist (ft)		412			497			1711				1088
Turn Bay Length (ft)			225			80	350			150		
Base Capacity (vph)		358	926		345	518	234	2907		229		2883
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		0.81	0.11		0.09	0.06	0.28	0.41		0.09		0.33

## Intersection Summary

Area Type:	Other
Cycle Length:	108
Actuated Cycle Length:	74.4
Natural Cycle:	60
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.81
Intersection Signal Delay:	21.7
Intersection LOS:	C
Intersection Capacity Utilization:	71.2%
ICU Level of Service:	C
Analysis Period (min):	15
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

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



# 8: Lowell Road (Route 3A) & Fox Hollow Drive/Nottingham Square Driveway Lanes, Volumes, Timings

2034 Build PM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	2	29	36	0	56	31	1353	17	65	798	13
Future Volume (vph)	10	2	29	36	0	56	31	1353	17	65	798	13
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		0.959			0.950		0.950			0.950		
Satd. Flow (prot)	0	1822	1583	0	1865	1669	1745	1818	1615	1805	1878	0
Flt Permitted		0.731			0.749		0.950			0.950		
Satd. Flow (perm)	0	1389	1583	0	1471	1669	1745	1818	1615	1805	1878	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			91			62			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	0.90	0.90	0.90	0.90	0.90	0.90	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	2	32	40	0	62	31	1367	17	69	849	14
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	13	32	0	40	62	31	1367	17	69	863	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)		8.2	8.2		8.2	21.1	7.0	140.5	140.5	9.1	146.1	
Actuated g/C Ratio		0.05	0.05		0.05	0.12	0.04	0.78	0.78	0.05	0.81	
v/c Ratio		0.21	0.20		0.61	0.25	0.46	0.96	0.01	0.76	0.57	
Control Delay		89.5	2.9		119.1	16.1	105.6	36.1	0.0	126.5	12.2	

# 8: Lowell Road (Route 3A) & Fox Hollow Drive/Nottingham Square Driveway Lanes, Volumes, Timings

2034 Build PM

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	



# 8: Lowell Road (Route 3A) & Fox Hollow Drive/Nottingham Square Driveway Lanes, Volumes, Timings

2034 Build PM

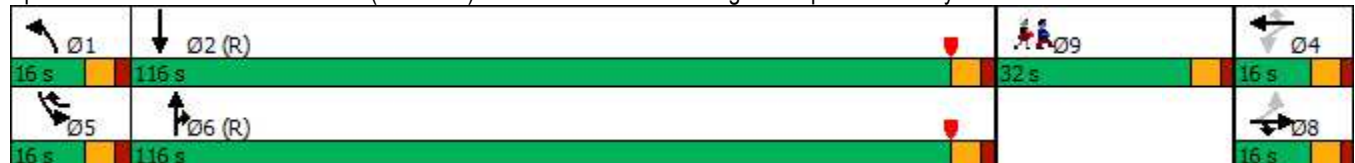


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		3.2
Total Delay		89.5	2.9		119.1	16.1	105.6	36.1	0.0	126.5		15.4
LOS		F	A		F	B	F	D	A	F		B
Approach Delay		27.9			56.5			37.2				23.6
Approach LOS		C			E			D				C
Queue Length 50th (ft)		15	0		47	0	37	1181	0	82		304
Queue Length 95th (ft)		42	0		94	49	77	#2248	0	#164		892
Internal Link Dist (ft)		518			182			1325				469
Turn Bay Length (ft)			50			100	210		325	125		
Base Capacity (vph)		77	173		81	258	96	1419	1280	100		1524
Starvation Cap Reductn		0	0		0	0	0	0	0	0		540
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		0.17	0.18		0.49	0.24	0.32	0.96	0.01	0.69		0.88

## 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: 32.8  
 Intersection LOS: C  
 Intersection Capacity Utilization 94.5%  
 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



# 8: Lowell Road (Route 3A) & Fox Hollow Drive/Nottingham Square Driveway Lanes, Volumes, Timings

2034 Build PM

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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	

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# 9: Lowell Road (Route 3A) & Pelham Road Lanes, Volumes, Timings

2034 Build PM



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø9
Lane Configurations							
Traffic Volume (vph)	96	160	1286	123	124	786	
Future Volume (vph)	96	160	1286	123	124	786	
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	
Fr <sub>t</sub>		0.850	0.988				
Fl <sub>t</sub> Protected	0.950				0.950		
Satd. Flow (prot)	1805	850	1922	0	1805	1881	
Fl <sub>t</sub> 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	0.90	0.90	0.98	0.98	0.90	0.90	
Heavy Vehicles (%)	0%	0%	1%	0%	0%	1%	
Adj. Flow (vph)	107	178	1312	126	138	873	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	107	178	1438	0	138	873	
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)	14.9	27.9	143.1		7.0	156.1	
Actuated g/C Ratio	0.08	0.15	0.75		0.04	0.82	
v/c Ratio	0.76	0.70	0.99		2.09	0.57	
Control Delay	116.2	29.6	44.5		574.4	10.3	

# 9: Lowell Road (Route 3A) & Pelham Road Lanes, Volumes, Timings

2034 Build PM

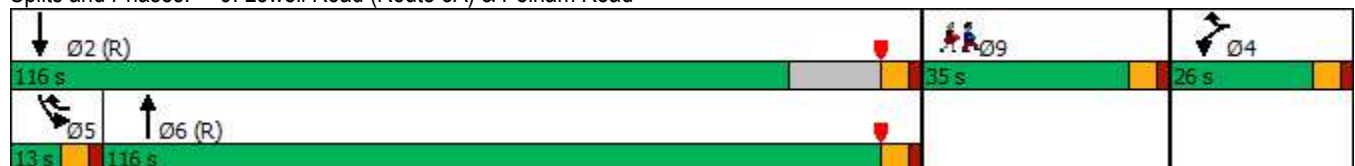


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø9
Queue Delay	0.0	0.0	38.0		0.0	0.0	
Total Delay	116.2	29.6	82.5		574.4	10.3	
LOS	F	C	F		F	B	
Approach Delay	62.1		82.5			87.3	
Approach LOS	E		F			F	
Queue Length 50th (ft)	133	28	1350		~271	239	
Queue Length 95th (ft)	204	130	#2546		#431	862	
Internal Link Dist (ft)	432		469			1229	
Turn Bay Length (ft)		75			150		
Base Capacity (vph)	190	252	1448		66	1545	
Starvation Cap Reductn	0	0	233		0	0	
Spillback Cap Reductn	0	0	0		0	0	
Storage Cap Reductn	0	0	0		0	0	
Reduced v/c Ratio	0.56	0.71	1.18		2.09	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: 2.09  
 Intersection Signal Delay: 82.2  
 Intersection LOS: F  
 Intersection Capacity Utilization 104.0%  
 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 H**

### **Capacity Analysis – 2024 Build with Proposed Improvements Traffic Conditions**

**2024 Build with Proposed Improvements Weekday A.M.**

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

Lanes, Volumes, Timings

2024 Build with Improvements AM



Lane Group	EBL	EBR	EBR2	NBL	NBT	NBR	SBL	SBT	SBR	NWL	NWR
Lane Configurations											
Traffic Volume (vph)	2	0	2	0	280	0	499	522	13	1	856
Future Volume (vph)	2	0	2	0	280	0	499	522	13	1	856
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	0		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	0.97	1.00	1.00	1.00	1.00
Fr <sub>t</sub>		0.850						0.996			0.850
Fl <sub>t</sub> Protected	0.950						0.950			0.950	
Satd. Flow (prot)	1685	1133	0	1773	3574	0	3204	1874	0	1805	1583
Fl <sub>t</sub> Permitted	0.950						0.950			0.950	
Satd. Flow (perm)	1685	1133	0	1773	3574	0	3204	1874	0	1805	1583
Right Turn on Red			Yes			Yes			Yes		Yes
Satd. Flow (RTOR)		527						2			536
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	0.90	0.90	0.90	0.90	0.90	0.90	0.92	0.92	0.92	0.90	0.90
Heavy Vehicles (%)	0%	0%	33%	0%	1%	0%	2%	1%	0%	0%	2%
Adj. Flow (vph)	2	0	2	0	311	0	542	567	14	1	951
Shared Lane Traffic (%)											
Lane Group Flow (vph)	2	2	0	0	311	0	542	581	0	1	951
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)	17.0	17.0		16.0	18.0		40.0	42.0		15.0	
Total Split (%)	18.9%	18.9%		17.8%	20.0%		44.4%	46.7%		16.7%	
Maximum Green (s)	11.0	11.0		10.0	12.0		34.0	36.0		9.0	
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)	5.7	5.7			25.4		34.3	65.7		9.8	49.0
Actuated g/C Ratio	0.06	0.06			0.28		0.38	0.73		0.11	0.54
v/c Ratio	0.02	0.00			0.31		0.44	0.42		0.01	0.86
Control Delay	40.0	0.0			29.8		27.8	3.4		37.0	16.0
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0
Total Delay	40.0	0.0			29.8		27.8	3.4		37.0	16.0
LOS	D	A			C		C	A		D	B

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

Lanes, Volumes, Timings

2024 Build with Improvements AM

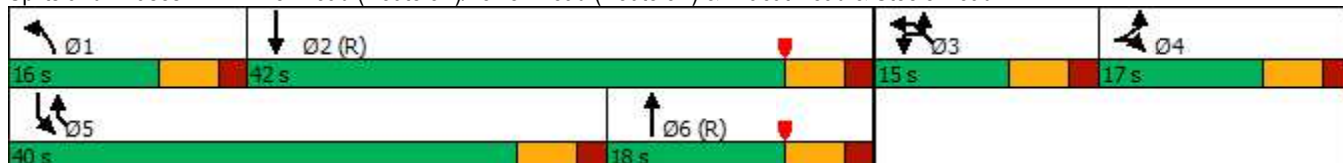


Lane Group	EBL	EBR	EBR2	NBL	NBT	NBR	SBL	SBT	SBR	NWL	NWR
Approach Delay	20.0			29.8			15.2			16.0	
Approach LOS	B			C			B			B	
Queue Length 50th (ft)	1	0		73			134	3		1	168
Queue Length 95th (ft)	8	0		133			101	8		5	#314
Internal Link Dist (ft)	511			678			1653			542	
Turn Bay Length (ft)	50						775			100	
Base Capacity (vph)	205	601		1008			1353	1369		197	1148
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	0.01	0.00		0.31			0.40	0.42		0.01	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: 0.86  
 Intersection Signal Delay: 17.4  
 Intersection LOS: B  
 Intersection Capacity Utilization 70.7%  
 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: 1: River Road (Route 3A)/Lowell Road (Route 3A) & Dracut Road & Steele Road





## 2: Lowell Road (Route 3A) & Site Driveway/Rena Avenue Lanes, Volumes, Timings

2024 Build with Improvements AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 				 			 		 	  	
Traffic Volume (vph)	183	0	33	1	1	34	47	1138	2	7	1004	234
Future Volume (vph)	183	0	33	1	1	34	47	1138	2	7	1004	234
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	0.91	0.91
Fr <sub>t</sub>		0.850			0.872						0.972	
Fl <sub>t</sub> Protected	0.950				0.999		0.950			0.950		
Satd. Flow (prot)	3268	1507	0	0	1659	0	1685	3538	0	1752	4868	0
Fl <sub>t</sub> Permitted	0.950				0.999		0.950			0.950		
Satd. Flow (perm)	3268	1507	0	0	1659	0	1685	3538	0	1752	4868	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		379			38						77	
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	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.95	0.95	0.95
Heavy Vehicles (%)	0%	0%	0%	9%	0%	3%	0%	2%	20%	3%	3%	6%
Adj. Flow (vph)	203	0	37	1	1	38	52	1264	2	7	1057	246
Shared Lane Traffic (%)												
Lane Group Flow (vph)	203	37	0	0	40	0	52	1266	0	7	1303	0
Turn Type	Split	NA		Split	NA		Prot	NA		Prot	NA	
Protected Phases	3	3		4	4		1	6		5	2	
Permitted Phases												
Detector Phase	3	3		4	4		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)	11.0	11.0		11.0	11.0		22.0	48.0		20.0	46.0	
Total Split (%)	12.2%	12.2%		12.2%	12.2%		24.4%	53.3%		22.2%	51.1%	
Maximum Green (s)	5.0	5.0		5.0	5.0		16.0	42.0		14.0	40.0	
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	Lead		Lag	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	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	4.0	
Recall Mode	None	None		None	None		None	C-Min		None	C-Min	
Act Effct Green (s)	10.3	10.3			5.6		9.2	58.3		7.0	51.2	
Actuated g/C Ratio	0.11	0.11			0.06		0.10	0.65		0.08	0.57	
v/c Ratio	0.54	0.07			0.29		0.30	0.55		0.05	0.47	
Control Delay	47.2	0.3			20.4		42.7	10.2		37.9	9.6	
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay	47.2	0.3			20.4		42.7	10.2		37.9	9.6	
LOS	D	A			C		D	B		D	A	

## 2: Lowell Road (Route 3A) & Site Driveway/Rena Avenue Lanes, Volumes, Timings

2024 Build with Improvements AM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		39.9			20.4			11.4				9.8
Approach LOS		D			C			B				A
Queue Length 50th (ft)	55	0			1		29	195		4		72
Queue Length 95th (ft)	#138	0			32		m39	264		m10		73
Internal Link Dist (ft)		430			477			1653				900
Turn Bay Length (ft)							300			350		
Base Capacity (vph)	374	508			139		299	2292		272		2801
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	0.54	0.07			0.29		0.17	0.55		0.03		0.47

### Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 53 (59%), 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: 13.2

Intersection LOS: B

Intersection Capacity Utilization 60.9%

ICU Level of Service B

Analysis Period (min) 15

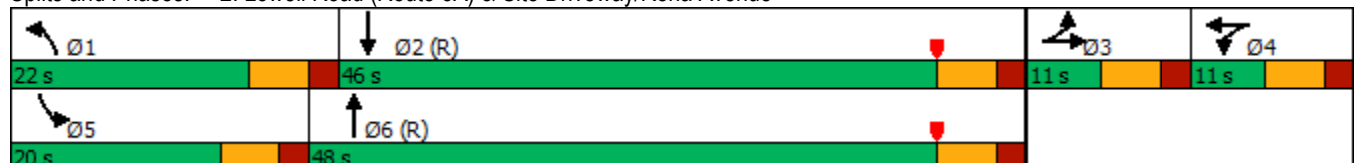
Description: NHDOT Int. No.: S-229-03

# 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



### 3: Lowell Road (Route 3A) & Sam's Club Driveway/Walmart Driveway Lanes, Volumes, Timings

2024 Build with Improvements AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 		 	 		 	 	  		 		
Traffic Volume (vph)	135	4	58	16	5	75	65	1268	28	89	1163	95
Future Volume (vph)	135	4	58	16	5	75	65	1268	28	89	1163	95
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		400
Storage Lanes	2		1	2		1	2		0	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	0.91	0.91	0.97	0.91	1.00
Fr <sub>t</sub>			0.850			0.850		0.997				0.850
Fl <sub>t</sub> Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3019	1852	1568	3502	1900	1589	3467	5022	0	3433	5085	1313
Fl <sub>t</sub> Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3019	1852	1568	3502	1900	1589	3467	5022	0	3433	5085	1313
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			109			109		4				109
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	0.90	0.90	0.90	0.90	0.90	0.90	0.96	0.96	0.96
Heavy Vehicles (%)	16%	6%	3%	0%	0%	5%	1%	3%	2%	2%	2%	23%
Adj. Flow (vph)	145	4	62	18	6	83	72	1409	31	93	1211	99
Shared Lane Traffic (%)												
Lane Group Flow (vph)	145	4	62	18	6	83	72	1440	0	93	1211	99
Turn Type	Prot	NA	pt+ov	Prot	NA	pt+ov	Prot	NA		Prot	NA	pt+ov
Protected Phases	7	4	4 1	3	8	8 5	1	6		5	2	2 7
Permitted Phases												
Detector Phase	7	4	4 1	3	8	8 5	1	6		5	2	2 7
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)	14.0	15.0		14.0	15.0		15.0	46.0		15.0	46.0	
Total Split (%)	15.6%	16.7%		15.6%	16.7%		16.7%	51.1%		16.7%	51.1%	
Maximum Green (s)	8.0	9.0		8.0	9.0		9.0	40.0		9.0	40.0	
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	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	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	4.0	4.0		4.0	4.0		4.0	6.0		4.0	6.0	
Recall Mode	None	None		None	None		None	C-Min		None	C-Min	
Act Effct Green (s)	8.0	13.2	27.3	7.0	7.1	19.1	8.1	47.5		8.5	47.9	63.0
Actuated g/C Ratio	0.09	0.15	0.30	0.08	0.08	0.21	0.09	0.53		0.09	0.53	0.70
v/c Ratio	0.54	0.01	0.11	0.07	0.04	0.20	0.23	0.54		0.29	0.45	0.10
Control Delay	47.4	36.0	1.7	38.8	38.2	4.2	44.4	12.8		47.5	11.6	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	47.4	36.0	1.7	38.8	38.2	4.2	44.4	12.8		47.5	11.6	0.5
LOS	D	D	A	D	D	A	D	B		D	B	A

### 3: Lowell Road (Route 3A) & Sam's Club Driveway/Walmart Driveway Lanes, Volumes, Timings

2024 Build with Improvements AM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		33.8			11.9			14.3			13.2	
Approach LOS		C			B			B			B	
Queue Length 50th (ft)	41	2	0	5	3	0	23	151		26	111	0
Queue Length 95th (ft)	72	12	9	15	15	22	m41	143		m38	251	m0
Internal Link Dist (ft)		321			369			900			1109	
Turn Bay Length (ft)	175		175	150		200	350			350		400
Base Capacity (vph)	268	280	535	311	190	378	348	2652		350	2704	936
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.54	0.01	0.12	0.06	0.03	0.22	0.21	0.54		0.27	0.45	0.11

#### Intersection Summary

Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	90
Offset:	53 (59%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow
Natural Cycle:	60
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.54
Intersection Signal Delay:	15.0
Intersection LOS:	B
Intersection Capacity Utilization:	54.8%
ICU Level of Service:	A
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

Ø1 15 s	Ø2 (R) 46 s	Ø3 14 s	Ø4 15 s
Ø5 15 s	Ø6 (R) 46 s	Ø7 14 s	Ø8 15 s

#### 4: Lowell Road (Route 3A) & Sagamore Bridge Road Lanes, Volumes, Timings

2024 Build with Improvements AM



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔↔	↗	↔↔↔	↕↕	↕↕	↖↖
Traffic Volume (vph)	993	1044	1078	386	380	1557
Future Volume (vph)	993	1044	1078	386	380	1557
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	0.94	0.95	0.95	0.88
Fr <sub>t</sub>		0.850				0.850
Fl <sub>t</sub> Protected	0.950		0.950			
Satd. Flow (prot)	3662	1656	4894	3539	3539	2760
Fl <sub>t</sub> Permitted	0.950		0.950			
Satd. Flow (perm)	3662	1656	4894	3539	3539	2760
Right Turn on Red		No				Yes
Satd. Flow (RTOR)						1226
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)	1056	1111	1172	420	413	1692
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1056	1111	1172	420	413	1692
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)	38.0		33.0	52.0	19.0	
Total Split (%)	42.2%		36.7%	57.8%	21.1%	
Maximum Green (s)	32.0		25.0	45.0	12.0	
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)	30.9	90.0	25.0	46.1	13.1	90.0
Actuated g/C Ratio	0.34	1.00	0.28	0.51	0.15	1.00
v/c Ratio	0.84	0.67	0.86	0.23	0.80	0.61
Control Delay	34.4	2.2	26.2	4.5	34.7	4.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.4	2.2	26.2	4.5	34.7	4.5
LOS	C	A	C	A	C	A

# 4: Lowell Road (Route 3A) & Sagamore Bridge Road Lanes, Volumes, Timings

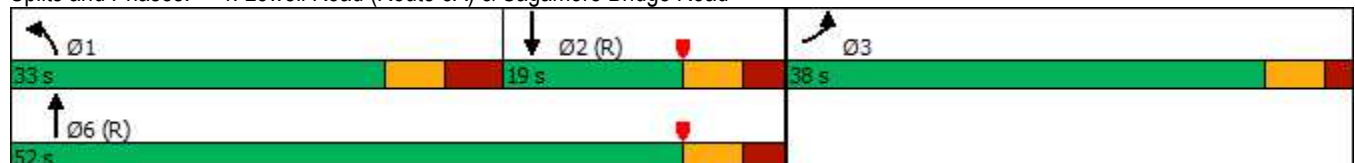


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Approach Delay	17.9			20.5	10.4	
Approach LOS	B			C	B	
Queue Length 50th (ft)	276	0	215	17	116	106
Queue Length 95th (ft)	355	0	#250	14	m129	m108
Internal Link Dist (ft)	849			1109	919	
Turn Bay Length (ft)			525			200
Base Capacity (vph)	1302	1656	1368	1813	514	2760
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	0.81	0.67	0.86	0.23	0.80	0.61

## 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, Master Intersection  
 Natural Cycle: 75  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.86  
 Intersection Signal Delay: 15.9 Intersection LOS: B  
 Intersection Capacity Utilization 76.0% ICU Level of Service D  
 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



5: Lowell Road (Route 3A) & Flagstone Drive/Wason Road  
Lanes, Volumes, Timings

2024 Build with Improvements AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	63	28	287	626	42	30	322	848	192	16	1106	10
Future Volume (vph)	63	28	287	626	42	30	322	848	192	16	1106	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		2	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	0.88	1.00	0.91	0.91
Frt			0.850			0.850			0.850		0.999	
Flt Protected		0.967		0.950	0.958		0.950			0.950		
Satd. Flow (prot)	0	1837	1583	1641	1657	1501	1787	3539	2787	1752	5078	0
Flt Permitted		0.967		0.950	0.958		0.950			0.950		
Satd. Flow (perm)	0	1837	1583	1641	1657	1501	1787	3539	2787	1752	5078	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			109			182			202			1
Link Speed (mph)		30			30			30				30
Link Distance (ft)		805			586			999				430
Travel Time (s)		18.3			13.3			22.7				9.8
Peak Hour Factor	0.90	0.90	0.90	0.94	0.94	0.94	0.95	0.95	0.95	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	2%	1%	0%	4%	1%	2%	2%	3%	2%	6%
Adj. Flow (vph)	70	31	319	666	45	32	339	893	202	18	1229	11
Shared Lane Traffic (%)				47%								
Lane Group Flow (vph)	0	101	319	353	358	32	339	893	202	18	1240	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)	12.0	12.0	23.0	26.0	26.0	11.0	23.0	41.0	26.0	11.0	29.0	
Total Split (%)	13.3%	13.3%	25.6%	28.9%	28.9%	12.2%	25.6%	45.6%	28.9%	12.2%	32.2%	
Maximum Green (s)	6.0	6.0	17.0	20.0	20.0	5.0	17.0	35.0	20.0	5.0	23.0	
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	C-Min	None	None	C-Min	
Act Effct Green (s)		6.0	29.0	20.0	20.0	25.0	17.0	39.4	65.4	5.0	23.0	
Actuated g/C Ratio		0.07	0.32	0.22	0.22	0.28	0.19	0.44	0.73	0.06	0.26	
v/c Ratio		0.83	0.55	0.97	0.97	0.06	1.01	0.58	0.10	0.19	0.96	
Control Delay		89.1	20.2	77.0	77.5	0.2	93.3	20.4	0.1	45.2	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		89.1	20.2	77.0	77.5	0.2	93.3	20.4	0.1	45.2	50.2	
LOS		F	C	E	E	A	F	C	A	D	D	

# 5: Lowell Road (Route 3A) & Flagstone Drive/Wason Road Lanes, Volumes, Timings

2024 Build with Improvements AM

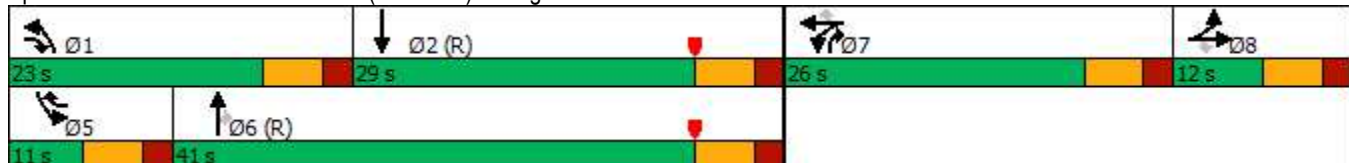


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		36.8			73.9			34.8				50.2
Approach LOS		D			E			C				D
Queue Length 50th (ft)		58	95	210	213	0	~213	138	0	10		254
Queue Length 95th (ft)		#148	179	#390	#397	0	m#333	210	m0	32		#349
Internal Link Dist (ft)		725			506			919				350
Turn Bay Length (ft)			250	200		75	575		275	175		
Base Capacity (vph)		122	583	364	368	548	337	1549	2080	97		1298
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		0.83	0.55	0.97	0.97	0.06	1.01	0.58	0.10	0.19		0.96

## Intersection Summary

Area Type: Other  
 Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 48 (53%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow  
 Natural Cycle: 90  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.01  
 Intersection Signal Delay: 47.6  
 Intersection LOS: D  
 Intersection Capacity Utilization 79.5%  
 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.  
 m Volume for 95th percentile queue is metered by upstream signal.

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


























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

## Lanes, Volumes, Timings

2024 Build with Improvements AM AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	0	50	6	0	11	4	583	1	17	1334	3
Future Volume (vph)	12	0	50	6	0	11	4	583	1	17	1334	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		0.769			0.769		0.950			0.950		
Satd. Flow (perm)	0	1392	1583	0	1510	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	0.90	0.90	0.90	0.90	0.90	0.90	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)	13	0	56	7	0	12	4	641	1	18	1404	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	13	56	0	7	12	4	642	0	18	1407	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)		6.2	6.2		6.2	16.1	5.0	151.1		6.1	156.6	
Actuated g/C Ratio		0.03	0.03		0.03	0.09	0.03	0.84		0.03	0.87	
v/c Ratio		0.28	0.39		0.14	0.06	0.08	0.23		0.30	0.87	
Control Delay		98.4	10.4		89.2	0.5	89.0	5.6		96.5	17.8	

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

## Lanes, Volumes, Timings

2024 Build with Improvements AM AM

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	

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

Lanes, Volumes, Timings

2024 Build with Improvements AM AM

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	18.8	
Total Delay		98.4	10.4		89.2	0.5	89.0	5.6		96.5	36.6	
LOS		F	B		F	A	F	A		F	D	
Approach Delay		27.0			33.2			6.2			37.3	
Approach LOS		C			C			A			D	
Queue Length 50th (ft)		15	0		8	0	5	67		21	471	
Queue Length 95th (ft)		42	10		27	0	20	211		52	#2229	
Internal Link Dist (ft)		518			182			1325			469	
Turn Bay Length (ft)			50			100	210			125		
Base Capacity (vph)		77	173		83	233	96	2818		100	1621	
Starvation Cap Reductn		0	0		0	0	0	0		0	251	
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		0.17	0.32		0.08	0.05	0.04	0.23		0.18	1.03	

## 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: 0.87

Intersection Signal Delay: 27.6

Intersection LOS: C

Intersection Capacity Utilization 93.7%

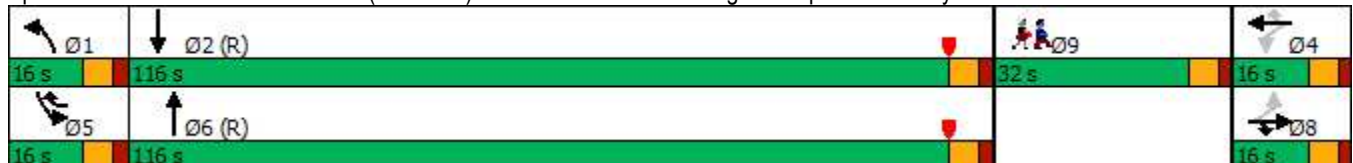
ICU Level of Service F

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



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

## Lanes, Volumes, Timings

2024 Build with Improvements AM AM

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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	

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**2024 Build with Proposed Improvements Weekday P.M.**

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

Lanes, Volumes, Timings

2024 Build with Improvements PM



Lane Group	EBL	EBR	EBR2	NBL	NBT	NBR	SBL	SBT	SBR	NWL2	NWL	NWR
Lane Configurations												
Traffic Volume (vph)	37	2	2	1	605	1	902	409	14	4	0	666
Future Volume (vph)	37	2	2	1	605	1	902	409	14	4	0	666
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	0.97	1.00	1.00	1.00	1.00	1.00
Fr <sub>t</sub>		0.850						0.995				0.850
Fl <sub>t</sub> Protected	0.950			0.950			0.950				0.950	
Satd. Flow (prot)	1668	1507	0	1685	3610	0	3268	1872	0	0	1805	1615
Fl <sub>t</sub> Permitted	0.950			0.950			0.950				0.950	
Satd. Flow (perm)	1668	1507	0	1685	3610	0	3268	1872	0	0	1805	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		191						2				291
Link Speed (mph)	30			35			35		35		35	
Link Distance (ft)	591			758			1733		622			
Travel Time (s)	13.4			14.8			33.8		12.1			
Peak Hour Factor	0.90	0.90	0.90	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)	41	2	2	1	665	1	1002	454	16	4	0	732
Shared Lane Traffic (%)												
Lane Group Flow (vph)	41	4	0	1	666	0	1002	470	0	0	4	732
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)	22.0	22.0		16.0	32.0		51.0	67.0		15.0	15.0	
Total Split (%)	18.3%	18.3%		13.3%	26.7%		42.5%	55.8%		12.5%	12.5%	
Maximum Green (s)	16.0	16.0		10.0	26.0		45.0	61.0		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	0.0	
Total Lost Time (s)	6.0	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)	8.4	8.4		5.6	32.5		46.5	82.5			11.0	58.6
Actuated g/C Ratio	0.07	0.07		0.05	0.27		0.39	0.69			0.09	0.49
v/c Ratio	0.35	0.01		0.01	0.68		0.79	0.36			0.02	0.78
Control Delay	60.7	0.0		55.0	45.0		17.7	3.3			52.0	19.1
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Total Delay	60.7	0.0		55.0	45.0		17.7	3.3			52.0	19.1
LOS	E	A		D	D		B	A			D	B

# 1: River Road (Route 3A)/Lowell Road (Route 3A) & Dracut Road & Steele Road

## Lanes, Volumes, Timings

2024 Build with Improvements PM

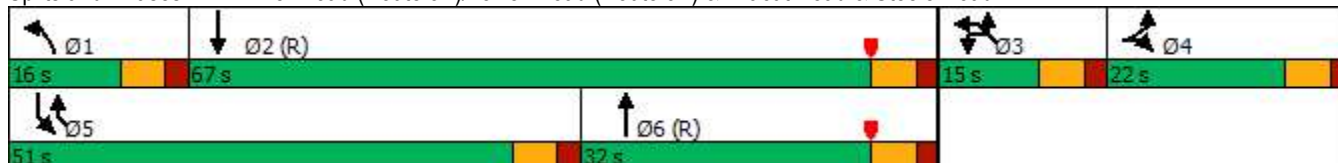


Lane Group	EBL	EBR	EBR2	NBL	NBT	NBR	SBL	SBT	SBR	NWL2	NWL	NWR
Approach Delay	55.3			45.0			13.1			19.3		
Approach LOS	E			D			B			B		
Queue Length 50th (ft)	31	0		1	249		119	58			3	195
Queue Length 95th (ft)	67	0		7	#354		71	162			15	368
Internal Link Dist (ft)	511			678			1653			542		
Turn Bay Length (ft)	50			200			775			100		
Base Capacity (vph)	222	366		140	976		1302	1288			164	952
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	0.18	0.01		0.01	0.68		0.77	0.36			0.02	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: 90  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.79  
 Intersection Signal Delay: 22.6  
 Intersection LOS: C  
 Intersection Capacity Utilization 70.8%  
 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: 1: River Road (Route 3A)/Lowell Road (Route 3A) & Dracut Road & Steele Road



## 2: Lowell Road (Route 3A) & Site Driveway/Rena Avenue Lanes, Volumes, Timings

2024 Build with Improvements PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 				 		 	 		 	   	
Traffic Volume (vph)	288	0	56	1	0	16	40	1279	5	24	1260	242
Future Volume (vph)	288	0	56	1	0	16	40	1279	5	24	1260	242
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	0.91	0.91
Frt		0.850			0.872			0.999			0.976	
Flt Protected	0.950				0.997		0.950			0.950		
Satd. Flow (prot)	3268	1507	0	0	1707	0	1685	3606	0	1805	5063	0
Flt Permitted	0.950				0.997		0.950			0.950		
Satd. Flow (perm)	3268	1507	0	0	1707	0	1685	3606	0	1805	5063	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		360			136						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	0.90	0.90	0.90	0.90	0.90	0.90	0.93	0.93	0.93	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	320	0	62	1	0	18	43	1375	5	27	1400	269
Shared Lane Traffic (%)												
Lane Group Flow (vph)	320	62	0	0	19	0	43	1380	0	27	1669	0
Turn Type	Split	NA		Split	NA		Prot	NA		Prot	NA	
Protected Phases	3	3		4	4		1	6		5	2	
Permitted Phases												
Detector Phase	3	3		4	4		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		11.0	11.0		27.0	61.0		27.0	61.0	
Total Split (%)	17.5%	17.5%		9.2%	9.2%		22.5%	50.8%		22.5%	50.8%	
Maximum Green (s)	15.0	15.0		5.0	5.0		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	Lead		Lag	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	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	4.0	
Recall Mode	None	None		None	None		None	C-Min		None	C-Min	
Act Effct Green (s)	16.1	16.1			5.7		9.5	78.3		8.3	74.5	
Actuated g/C Ratio	0.13	0.13			0.05		0.08	0.65		0.07	0.62	
v/c Ratio	0.73	0.12			0.09		0.33	0.59		0.22	0.53	
Control Delay	60.5	0.5			0.8		65.2	13.6		67.9	6.0	
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay	60.5	0.5			0.8		65.2	13.6		67.9	6.0	
LOS	E	A			A		E	B		E	A	



## 2: Lowell Road (Route 3A) & Site Driveway/Rena Avenue Lanes, Volumes, Timings

2024 Build with Improvements PM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		50.7			0.8			15.2				7.0
Approach LOS		D			A			B				A
Queue Length 50th (ft)	120	0			0		34	200		22		79
Queue Length 95th (ft)	#190	0			0		m45	617		m44		83
Internal Link Dist (ft)		430			477			1653				900
Turn Bay Length (ft)							300			350		
Base Capacity (vph)	446	516			211		294	2352		315		3160
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	0.72	0.12			0.09		0.15	0.59		0.09		0.53

### 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: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.73

Intersection Signal Delay: 15.0

Intersection LOS: B

Intersection Capacity Utilization 60.4%

ICU Level of Service B

Analysis Period (min) 15

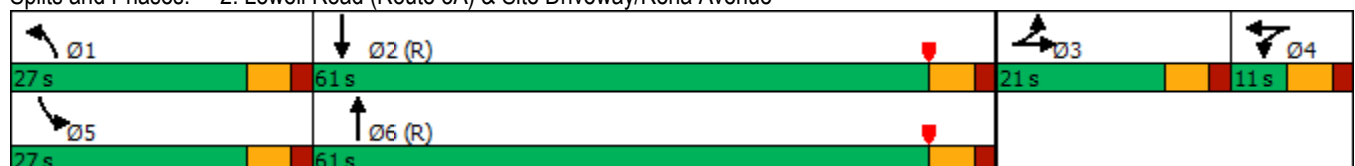
Description: NHDOT Int. No.: S-229-03

# 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



### 3: Lowell Road (Route 3A) & Sam's Club Driveway/Walmart Driveway Lanes, Volumes, Timings

2024 Build with Improvements PM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	282	14	119	92	21	256	100	1417	78	326	1328	228
Future Volume (vph)	282	14	119	92	21	256	100	1417	78	326	1328	228
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		400
Storage Lanes	2		1	2		1	2		0	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	0.91	0.91	0.97	0.91	1.00
Fr <sub>t</sub>			0.850			0.850		0.992				0.850
Fl <sub>t</sub> Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3335	1963	1615	3502	1900	1669	3467	5097	0	3502	5085	1538
Fl <sub>t</sub> Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3335	1963	1615	3502	1900	1669	3467	5097	0	3502	5085	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			136			136		10				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	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.91	0.91	0.91
Heavy Vehicles (%)	5%	0%	0%	0%	0%	0%	1%	1%	0%	0%	2%	5%
Adj. Flow (vph)	313	16	132	102	23	284	111	1574	87	358	1459	251
Shared Lane Traffic (%)												
Lane Group Flow (vph)	313	16	132	102	23	284	111	1661	0	358	1459	251
Turn Type	Prot	NA	pt+ov	Prot	NA	pt+ov	Prot	NA		Prot	NA	pt+ov
Protected Phases	7	4	4 1	3	8	8 5	1	6		5	2	2 7
Permitted Phases												
Detector Phase	7	4	4 1	3	8	8 5	1	6		5	2	2 7
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)	22.0	23.0		15.0	16.0		12.0	63.0		19.0	70.0	
Total Split (%)	18.3%	19.2%		12.5%	13.3%		10.0%	52.5%		15.8%	58.3%	
Maximum Green (s)	16.0	17.0		9.0	10.0		6.0	57.0		13.0	64.0	
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	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	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	4.0	4.0		4.0	4.0		4.0	6.0		4.0	6.0	
Recall Mode	None	None		None	None		None	C-Min		None	C-Min	
Act Effct Green (s)	15.3	16.4	28.7	8.7	9.7	29.3	6.4	57.4		13.6	64.6	85.9
Actuated g/C Ratio	0.13	0.14	0.24	0.07	0.08	0.24	0.05	0.48		0.11	0.54	0.72
v/c Ratio	0.74	0.06	0.27	0.40	0.15	0.56	0.61	0.68		0.90	0.53	0.21
Control Delay	61.4	45.4	7.1	58.1	53.6	24.9	63.5	20.9		78.1	13.6	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	61.4	45.4	7.1	58.1	53.6	24.9	63.5	20.9		78.1	13.6	0.2
LOS	E	D	A	E	D	C	E	C		E	B	A

### 3: Lowell Road (Route 3A) & Sam's Club Driveway/Walmart Driveway Lanes, Volumes, Timings

2024 Build with Improvements PM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		45.3			34.8			23.5			23.1	
Approach LOS		D			C			C			C	
Queue Length 50th (ft)	121	11	0	39	17	99	43	160		147	179	0
Queue Length 95th (ft)	170	32	47	69	44	190	m#72	259		m#176	m249	m0
Internal Link Dist (ft)		321			369			900			1109	
Turn Bay Length (ft)	175		175	150		200	350			350		400
Base Capacity (vph)	444	278	483	262	159	499	183	2441		396	2737	1179
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.70	0.06	0.27	0.39	0.14	0.57	0.61	0.68		0.90	0.53	0.21

#### 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: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.90

Intersection Signal Delay: 26.5

Intersection LOS: C

Intersection Capacity Utilization 68.1%

ICU Level of Service C

Analysis Period (min) 15

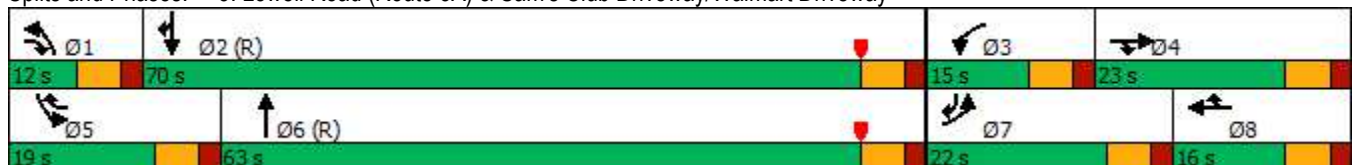
Description: NHDOT Int. No.: S-229-06

# 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



#### 4: Lowell Road (Route 3A) & Sagamore Bridge Road Lanes, Volumes, Timings

2024 Build with Improvements PM



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	1521	1434	1289	686	502	1285
Future Volume (vph)	1521	1434	1289	686	502	1285
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	0.94	0.95	0.95	0.88
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	3698	1689	5040	3610	3610	2814
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	3698	1689	5040	3610	3610	2814
Right Turn on Red		No				Yes
Satd. Flow (RTOR)						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	0.90	0.90
Heavy Vehicles (%)	1%	2%	1%	0%	0%	1%
Adj. Flow (vph)	1584	1494	1371	730	558	1428
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1584	1494	1371	730	558	1428
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)	53.0		40.0	67.0	27.0	
Total Split (%)	44.2%		33.3%	55.8%	22.5%	
Maximum Green (s)	47.0		32.0	60.0	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)	47.0	120.0	32.0	60.0	20.0	120.0
Actuated g/C Ratio	0.39	1.00	0.27	0.50	0.17	1.00
v/c Ratio	1.09	0.88	1.02	0.40	0.93	0.51
Control Delay	88.9	7.8	61.9	15.9	63.5	2.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	88.9	7.8	61.9	15.9	63.5	2.2
LOS	F	A	E	B	E	A

# 4: Lowell Road (Route 3A) & Sagamore Bridge Road Lanes, Volumes, Timings

2024 Build with Improvements PM

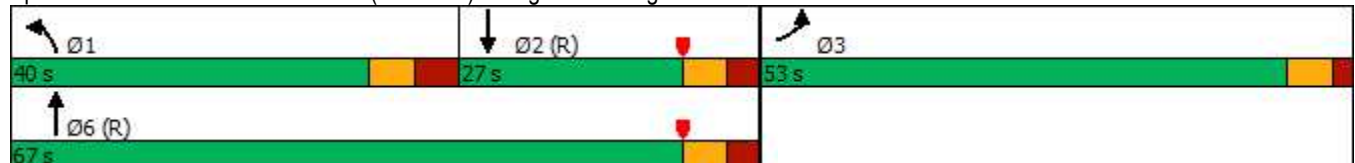


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Approach Delay	49.5			45.9	19.4	
Approach LOS	D			D	B	
Queue Length 50th (ft)	~714	0	~410	225	243	74
Queue Length 95th (ft)	#851	0	#495	245	m#344	62
Internal Link Dist (ft)	849			1109	919	
Turn Bay Length (ft)			525			200
Base Capacity (vph)	1448	1689	1344	1805	601	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	1.09	0.88	1.02	0.40	0.93	0.51

## Intersection Summary
























Area Type: Other  
 Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow  
 Natural Cycle: 140  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.09  
 Intersection Signal Delay: 40.1  
 Intersection LOS: D  
 Intersection Capacity Utilization 98.4%  
 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.  
 m Volume for 95th percentile queue is metered by upstream signal.

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



5: Lowell Road (Route 3A) & Flagstone Drive/Wason Road  
Lanes, Volumes, Timings

2024 Build with Improvements PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	52	93	441	443	18	28	146	1075	1008	74	935	5
Future Volume (vph)	52	93	441	443	18	28	146	1075	1008	74	935	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	0		2	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	0.88	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	2842	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	2842	1805	5131	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			82			136			618			1
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		805			586			999			427	
Travel Time (s)		18.3			13.3			22.7			9.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.94	0.94	0.94	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	1%	0%	0%	1%	1%	1%	0%	0%	1%	0%
Adj. Flow (vph)	58	103	490	492	20	31	155	1144	1072	82	1039	6
Shared Lane Traffic (%)				48%								
Lane Group Flow (vph)	0	161	490	256	256	31	155	1144	1072	82	1045	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)	22.0	22.0	34.0	28.0	28.0	15.0	34.0	55.0	28.0	15.0	36.0	
Total Split (%)	18.3%	18.3%	28.3%	23.3%	23.3%	12.5%	28.3%	45.8%	23.3%	12.5%	30.0%	
Maximum Green (s)	16.0	16.0	28.0	22.0	22.0	9.0	28.0	49.0	22.0	9.0	30.0	
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	C-Min	None	None	C-Min	
Act Effct Green (s)		13.9	42.6	22.6	22.6	31.2	22.7	53.3	82.0	8.6	36.8	
Actuated g/C Ratio		0.12	0.36	0.19	0.19	0.26	0.19	0.44	0.68	0.07	0.31	
v/c Ratio		0.75	0.79	0.82	0.82	0.06	0.46	0.72	0.50	0.64	0.66	
Control Delay		72.1	37.9	68.5	67.8	0.2	58.9	29.3	2.2	76.1	39.9	
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay		72.1	37.9	68.5	67.8	0.2	58.9	29.3	2.2	76.1	39.9	
LOS		E	D	E	E	A	E	C	A	E	D	

# 5: Lowell Road (Route 3A) & Flagstone Drive/Wason Road Lanes, Volumes, Timings

2024 Build with Improvements PM

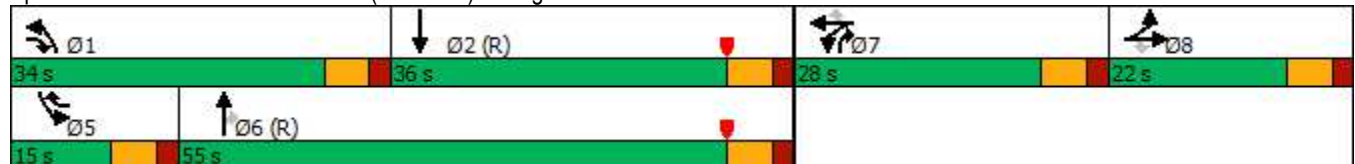


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		46.3			64.3			19.0				42.5
Approach LOS		D			E			B				D
Queue Length 50th (ft)		121	282	203	203	0	125	253	27	62	260	
Queue Length 95th (ft)		195	385	#352	#351	0	m141	m250	m28	#129	335	
Internal Link Dist (ft)		725			506			919			347	
Turn Bay Length (ft)			250	200		75	575		275	175		
Base Capacity (vph)		248	687	314	316	510	416	1591	2139	138	1574	
Starvation Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio		0.65	0.71	0.82	0.81	0.06	0.37	0.72	0.50	0.59	0.66	

## 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: 80  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.82  
 Intersection Signal Delay: 33.7  
 Intersection LOS: C  
 Intersection Capacity Utilization 73.2%  
 ICU Level of Service D  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.






















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



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

## Lanes, Volumes, Timings

2024 Build with Improvements PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	2	26	33	0	50	28	1231	16	59	727	12
Future Volume (vph)	9	2	26	33	0	50	28	1231	16	59	727	12
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		0.960			0.950		0.950			0.950		
Satd. Flow (prot)	0	1824	1583	0	1865	1669	1745	3449	0	1805	1878	0
Flt Permitted		0.736			0.750		0.950			0.950		
Satd. Flow (perm)	0	1398	1583	0	1473	1669	1745	3449	0	1805	1878	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			91			56		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	0.90	0.90	0.90	0.90	0.90	0.90	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)	10	2	29	37	0	56	28	1243	16	63	773	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	12	29	0	37	56	28	1259	0	63	786	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)		8.0	8.0		8.0	20.7	6.7	140.9		8.9	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		0.19	0.18		0.57	0.23	0.44	0.47		0.71	0.51	
Control Delay		88.9	2.6		115.7	16.9	104.3	9.7		121.8	10.9	



8: Lowell Road (Route 3A) & Fox Hollow Drive/Nottingham Square Driveway  
 Lanes, Volumes, Timings

2024 Build with Improvements PM

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	

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

## Lanes, Volumes, Timings

2024 Build with Improvements PM



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	2.5	
Total Delay		88.9	2.6		115.7	16.9	104.3	9.7		121.8	13.3	
LOS		F	A		F	B	F	A		F	B	
Approach Delay		27.8			56.2			11.8			21.4	
Approach LOS		C			E			B			C	
Queue Length 50th (ft)		14	0		44	0	33	220		74	251	
Queue Length 95th (ft)		39	0		89	46	71	530		#144	750	
Internal Link Dist (ft)		518			182			1325			469	
Turn Bay Length (ft)			50			100	210			125		
Base Capacity (vph)		77	173		81	251	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		0.16	0.17		0.46	0.22	0.29	0.47		0.63	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: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.71

Intersection Signal Delay: 17.5

Intersection LOS: B

Intersection Capacity Utilization 66.7%

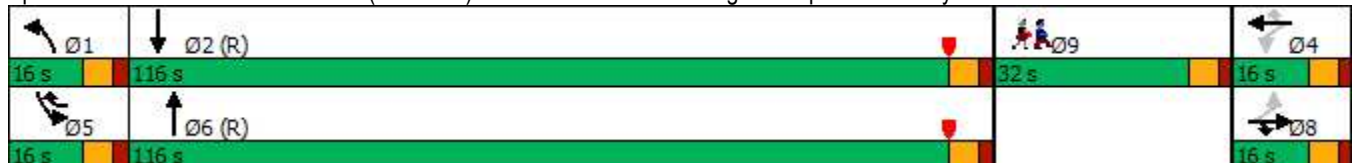
ICU Level of Service C

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



# 8: Lowell Road (Route 3A) & Fox Hollow Drive/Nottingham Square Driveway Lanes, Volumes, Timings

2024 Build with Improvements PM

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 I**

### **Capacity Analysis – 2034 Build with Proposed Improvements Traffic Conditions**

**2034 Build with Proposed Improvements Weekday A.M.**

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

Lanes, Volumes, Timings

2034 Build with Improvements AM



Lane Group	EBL	EBR	EBR2	NBL	NBT	NBR	SBL	SBT	SBR	NWL	NWR
Lane Configurations											
Traffic Volume (vph)	2	0	2	0	307	0	549	575	14	1	943
Future Volume (vph)	2	0	2	0	307	0	549	575	14	1	943
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	0		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	0.97	1.00	1.00	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	3204	1874	0	1805	1583
Flt Permitted	0.950						0.950			0.950	
Satd. Flow (perm)	1685	1133	0	1773	3574	0	3204	1874	0	1805	1583
Right Turn on Red			Yes			Yes			Yes		Yes
Satd. Flow (RTOR)		508						2			529
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	0.90	0.90	0.90	0.90	0.90	0.90	0.92	0.92	0.92	0.90	0.90
Heavy Vehicles (%)	0%	0%	33%	0%	1%	0%	2%	1%	0%	0%	2%
Adj. Flow (vph)	2	0	2	0	341	0	597	625	15	1	1048
Shared Lane Traffic (%)											
Lane Group Flow (vph)	2	2	0	0	341	0	597	640	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)	17.0	17.0		16.0	18.0		40.0	42.0		15.0	
Total Split (%)	18.9%	18.9%		17.8%	20.0%		44.4%	46.7%		16.7%	
Maximum Green (s)	11.0	11.0		10.0	12.0		34.0	36.0		9.0	
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)	5.7	5.7			12.2		48.2	66.4		9.2	62.2
Actuated g/C Ratio	0.06	0.06			0.14		0.54	0.74		0.10	0.69
v/c Ratio	0.02	0.00			0.71		0.35	0.46		0.01	0.83
Control Delay	40.0	0.0			46.2		14.8	3.3		37.0	13.2
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0
Total Delay	40.0	0.0			46.2		14.8	3.3		37.0	13.2
LOS	D	A			D		B	A		D	B

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

Lanes, Volumes, Timings

2034 Build with Improvements AM

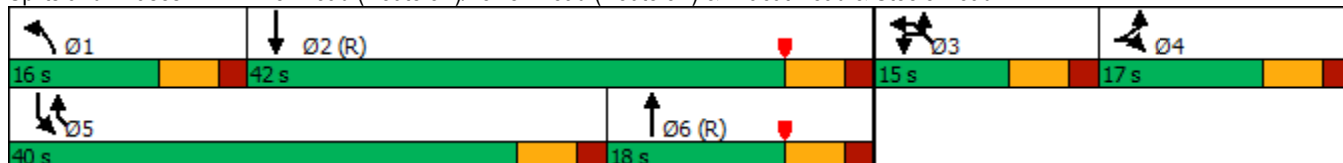


Lane Group	EBL	EBR	EBR2	NBL	NBT	NBR	SBL	SBT	SBR	NWL	NWR
Approach Delay	20.0				46.2			8.9		13.2	
Approach LOS	B				D			A		B	
Queue Length 50th (ft)	1	0			99		95	4		1	128
Queue Length 95th (ft)	8	0			#147		102	9		5	#755
Internal Link Dist (ft)	511				678			1653		542	
Turn Bay Length (ft)		50					775			100	
Base Capacity (vph)	205	584			483		1716	1383		184	1257
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	0.01	0.00			0.71		0.35	0.46		0.01	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: 100  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.83  
 Intersection Signal Delay: 15.5  
 Intersection LOS: B  
 Intersection Capacity Utilization 76.9%  
 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: 1: River Road (Route 3A)/Lowell Road (Route 3A) & Dracut Road & Steele Road



## 2: Lowell Road (Route 3A) & Site Driveway/Rena Avenue Lanes, Volumes, Timings

2034 Build with Improvements AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 				 			 		 	  	
Traffic Volume (vph)	183	0	33	1	1	37	48	1255	2	8	1109	239
Future Volume (vph)	183	0	33	1	1	37	48	1255	2	8	1109	239
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	0.91	0.91
Fr <sub>t</sub>		0.850			0.871						0.973	
Fl <sub>t</sub> Protected	0.950				0.999		0.950			0.950		
Satd. Flow (prot)	3268	1507	0	0	1657	0	1685	3538	0	1570	4914	0
Fl <sub>t</sub> Permitted	0.950				0.999		0.950			0.950		
Satd. Flow (perm)	3268	1507	0	0	1657	0	1685	3538	0	1570	4914	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		370			41						68	
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	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.95	0.95	0.95
Heavy Vehicles (%)	0%	0%	0%	9%	0%	3%	0%	2%	20%	15%	2%	6%
Adj. Flow (vph)	203	0	37	1	1	41	53	1394	2	8	1167	252
Shared Lane Traffic (%)												
Lane Group Flow (vph)	203	37	0	0	43	0	53	1396	0	8	1419	0
Turn Type	Split	NA		Split	NA		Prot	NA		Prot	NA	
Protected Phases	3	3		4	4		1	6		5	2	
Permitted Phases												
Detector Phase	3	3		4	4		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)	11.0	11.0		11.0	11.0		22.0	48.0		20.0	46.0	
Total Split (%)	12.2%	12.2%		12.2%	12.2%		24.4%	53.3%		22.2%	51.1%	
Maximum Green (s)	5.0	5.0		5.0	5.0		16.0	42.0		14.0	40.0	
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	Lead		Lag	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	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	4.0	
Recall Mode	None	None		None	None		None	C-Min		None	C-Min	
Act Effct Green (s)	9.1	9.1			5.6		9.2	59.4		7.1	52.3	
Actuated g/C Ratio	0.10	0.10			0.06		0.10	0.66		0.08	0.58	
v/c Ratio	0.61	0.08			0.30		0.31	0.60		0.06	0.49	
Control Delay	51.7	0.3			20.4		41.7	9.6		38.0	9.7	
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay	51.7	0.3			20.4		41.7	9.6		38.0	9.7	
LOS	D	A			C		D	A		D	A	



## 2: Lowell Road (Route 3A) & Site Driveway/Rena Avenue Lanes, Volumes, Timings

2034 Build with Improvements AM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		43.8			20.4			10.8				9.8
Approach LOS		D			C			B				A
Queue Length 50th (ft)	59	0			1		29	166		5		58
Queue Length 95th (ft)	#138	0			34		m35	448		m10		102
Internal Link Dist (ft)		430			477			1653				900
Turn Bay Length (ft)							300			350		
Base Capacity (vph)	331	485			141		299	2336		244		2885
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	0.08			0.30		0.18	0.60		0.03		0.49

### Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 53 (59%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.61

Intersection Signal Delay: 13.0

Intersection LOS: B

Intersection Capacity Utilization 61.8%

ICU Level of Service B

Analysis Period (min) 15

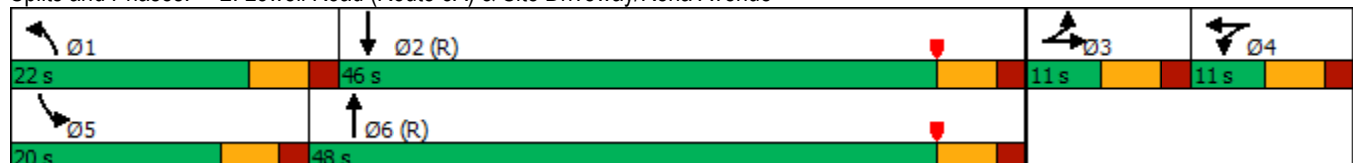
Description: NHDOT Int. No.: S-229-03

# 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



### 3: Lowell Road (Route 3A) & Sam's Club Driveway/Walmart Driveway Lanes, Volumes, Timings

2034 Build with Improvements AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 		 	 		 	 	  		 	  	
Traffic Volume (vph)	146	5	64	17	6	82	72	1381	31	99	1265	102
Future Volume (vph)	146	5	64	17	6	82	72	1381	31	99	1265	102
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		400
Storage Lanes	2		1	2		1	2		0	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	0.91	0.91	0.97	0.91	1.00
Fr <sub>t</sub>			0.850			0.850		0.997				0.850
Fl <sub>t</sub> Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3019	1852	1568	3502	1900	1589	3467	5022	0	3433	5085	1313
Fl <sub>t</sub> Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3019	1852	1568	3502	1900	1589	3467	5022	0	3433	5085	1313
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			109			109		5				109
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	0.90	0.90	0.90	0.90	0.90	0.90	0.96	0.96	0.96
Heavy Vehicles (%)	16%	6%	3%	0%	0%	5%	1%	3%	2%	2%	2%	23%
Adj. Flow (vph)	157	5	69	19	7	91	80	1534	34	103	1318	106
Shared Lane Traffic (%)												
Lane Group Flow (vph)	157	5	69	19	7	91	80	1568	0	103	1318	106
Turn Type	Prot	NA	pt+ov	Prot	NA	pt+ov	Prot	NA		Prot	NA	pt+ov
Protected Phases	7	4	4 1	3	8	8 5	1	6		5	2	2 7
Permitted Phases												
Detector Phase	7	4	4 1	3	8	8 5	1	6		5	2	2 7
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)	14.0	15.0		14.0	15.0		15.0	46.0		15.0	46.0	
Total Split (%)	15.6%	16.7%		15.6%	16.7%		16.7%	51.1%		16.7%	51.1%	
Maximum Green (s)	8.0	9.0		8.0	9.0		9.0	40.0		9.0	40.0	
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	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	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	4.0	4.0		4.0	4.0		4.0	6.0		4.0	6.0	
Recall Mode	None	None		None	None		None	C-Min		None	C-Min	
Act Effct Green (s)	8.0	13.3	27.5	7.0	7.2	19.3	8.2	44.7		8.6	47.6	62.8
Actuated g/C Ratio	0.09	0.15	0.31	0.08	0.08	0.21	0.09	0.50		0.10	0.53	0.70
v/c Ratio	0.59	0.02	0.12	0.07	0.05	0.21	0.25	0.63		0.31	0.49	0.11
Control Delay	48.9	35.8	2.4	38.8	38.2	5.2	44.0	14.1		47.5	12.2	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	48.9	35.8	2.4	38.8	38.2	5.2	44.0	14.1		47.5	12.2	0.5
LOS	D	D	A	D	D	A	D	B		D	B	A

### 3: Lowell Road (Route 3A) & Sam's Club Driveway/Walmart Driveway Lanes, Volumes, Timings

2034 Build with Improvements AM

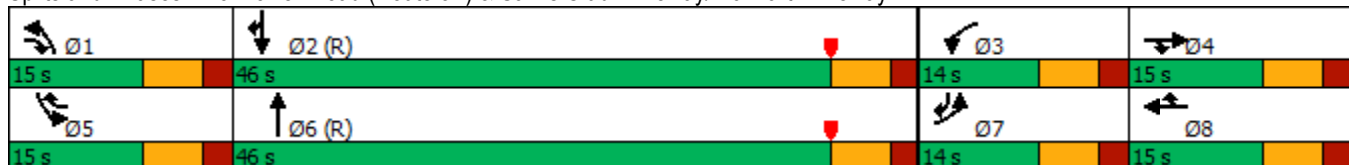


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		34.7			12.6			15.5			13.8	
Approach LOS		C			B			B			B	
Queue Length 50th (ft)	44	2	0	5	4	0	24	197		29	124	0
Queue Length 95th (ft)	76	13	13	15	17	27	m42	175		m38	m271	m0
Internal Link Dist (ft)		321			369			900			1109	
Turn Bay Length (ft)	175		175	150		200	350			350		400
Base Capacity (vph)	268	282	536	311	190	398	348	2495		350	2691	949
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.59	0.02	0.13	0.06	0.04	0.23	0.23	0.63		0.29	0.49	0.11

#### Intersection Summary

Area Type: Other  
 Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 53 (59%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow  
 Natural Cycle: 60  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.63  
 Intersection Signal Delay: 15.9  
 Intersection LOS: B  
 Intersection Capacity Utilization 57.4%  
 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



#### 4: Lowell Road (Route 3A) & Sagamore Bridge Road Lanes, Volumes, Timings

2034 Build with Improvements AM



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	1092	1135	1173	422	416	1717
Future Volume (vph)	1092	1135	1173	422	416	1717
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	0.94	0.95	0.95	0.88
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	3662	1656	4894	3539	3539	2760
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	3662	1656	4894	3539	3539	2760
Right Turn on Red		No				Yes
Satd. Flow (RTOR)						1225
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)	1162	1207	1275	459	452	1866
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1162	1207	1275	459	452	1866
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)	38.0		33.0	52.0	19.0	
Total Split (%)	42.2%		36.7%	57.8%	21.1%	
Maximum Green (s)	32.0		25.0	45.0	12.0	
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)	31.6	90.0	25.4	45.4	12.0	90.0
Actuated g/C Ratio	0.35	1.00	0.28	0.50	0.13	1.00
v/c Ratio	0.90	0.73	0.92	0.26	0.96	0.68
Control Delay	39.0	2.9	34.7	3.9	44.1	6.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.0	2.9	34.7	3.9	44.1	6.2
LOS	D	A	C	A	D	A

# 4: Lowell Road (Route 3A) & Sagamore Bridge Road Lanes, Volumes, Timings

2034 Build with Improvements AM

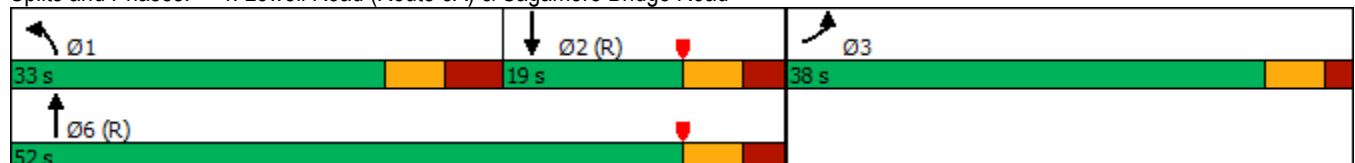


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Approach Delay	20.6			26.5	13.6	
Approach LOS	C			C	B	
Queue Length 50th (ft)	317	0	260	16	130	128
Queue Length 95th (ft)	#439	0	#332	16	m131	m114
Internal Link Dist (ft)	849			1109	919	
Turn Bay Length (ft)			525			200
Base Capacity (vph)	1302	1656	1382	1786	471	2760
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	0.73	0.92	0.26	0.96	0.68

## 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, Master Intersection  
 Natural Cycle: 90  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.96  
 Intersection Signal Delay: 19.7  
 Intersection LOS: B  
 Intersection Capacity Utilization 81.6%  
 ICU Level of Service D  
 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



# 5: Lowell Road (Route 3A) & Flagstone Drive/Wason Road

## Lanes, Volumes, Timings

2034 Build with Improvements AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	29	308	690	46	34	347	934	212	17	1215	11
Future Volume (vph)	65	29	308	690	46	34	347	934	212	17	1215	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		2	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	0.88	1.00	0.91	0.91
Frt			0.850			0.850			0.850		0.999	
Flt Protected		0.967		0.950	0.958		0.950			0.950		
Satd. Flow (prot)	0	1837	1583	1641	1657	1501	1787	3539	2787	1752	5078	0
Flt Permitted		0.967		0.950	0.958		0.950			0.950		
Satd. Flow (perm)	0	1837	1583	1641	1657	1501	1787	3539	2787	1752	5078	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			109			182			223			1
Link Speed (mph)		30			30			30				30
Link Distance (ft)		805			586			999				430
Travel Time (s)		18.3			13.3			22.7				9.8
Peak Hour Factor	0.90	0.90	0.90	0.94	0.94	0.94	0.95	0.95	0.95	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	2%	1%	0%	4%	1%	2%	2%	3%	2%	6%
Adj. Flow (vph)	72	32	342	734	49	36	365	983	223	19	1350	12
Shared Lane Traffic (%)				47%								
Lane Group Flow (vph)	0	104	342	389	394	36	365	983	223	19	1362	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)	12.0	12.0	23.0	26.0	26.0	11.0	23.0	41.0	26.0	11.0	29.0	
Total Split (%)	13.3%	13.3%	25.6%	28.9%	28.9%	12.2%	25.6%	45.6%	28.9%	12.2%	32.2%	
Maximum Green (s)	6.0	6.0	17.0	20.0	20.0	5.0	17.0	35.0	20.0	5.0	23.0	
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	C-Min	None	None	C-Min	
Act Effct Green (s)		6.0	29.0	20.0	20.0	25.0	17.0	39.4	65.4	5.0	23.0	
Actuated g/C Ratio		0.07	0.32	0.22	0.22	0.28	0.19	0.44	0.73	0.06	0.26	
v/c Ratio		0.85	0.59	1.07	1.07	0.07	1.08	0.63	0.11	0.20	1.05	
Control Delay		93.5	21.7	102.4	102.7	0.2	110.3	22.0	0.1	45.5	72.8	
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay		93.5	21.7	102.4	102.7	0.2	110.3	22.0	0.1	45.5	72.8	
LOS		F	C	F	F	A	F	C	A	D	E	

# 5: Lowell Road (Route 3A) & Flagstone Drive/Wason Road Lanes, Volumes, Timings

2034 Build with Improvements AM

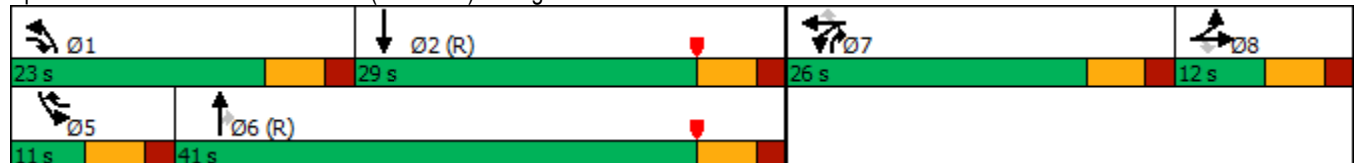


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		38.5			98.1			39.4				72.4
Approach LOS		D			F			D				E
Queue Length 50th (ft)		60	108	~260	~264	0	~245	170	0	11	~312	
Queue Length 95th (ft)		#153	198	#444	#449	0	m#335	m217	m0	33	#406	
Internal Link Dist (ft)		725			506			919				350
Turn Bay Length (ft)			250	200		75	575		275	175		
Base Capacity (vph)		122	583	364	368	548	337	1549	2086	97	1298	
Starvation Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio		0.85	0.59	1.07	1.07	0.07	1.08	0.63	0.11	0.20	1.05	

## Intersection Summary























Area Type: Other  
 Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 48 (53%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow  
 Natural Cycle: 100  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.08  
 Intersection Signal Delay: 61.5  
 Intersection LOS: E  
 Intersection Capacity Utilization 84.9%  
 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.  
 m Volume for 95th percentile queue is metered by upstream signal.

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



7: Lowell Road (Route 3A) & Executive Drive  
Lanes, Volumes, Timings

2034 Build + Improvements + Optimization AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	43	2	16	164	35	117	197	510	70	124	1169	229
Future Volume (vph)	43	2	16	164	35	117	197	510	70	124	1169	229
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		0.982			0.975	
Flt Protected		0.954			0.960		0.950			0.950		
Satd. Flow (prot)	0	1571	1558	0	1809	1620	1711	3413	0	1728	3451	0
Flt Permitted		0.458			0.729		0.950			0.950		
Satd. Flow (perm)	0	754	1558	0	1374	1620	1711	3413	0	1728	3451	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			30			103		19			29	
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	0.90	0.90	0.90	0.90	0.90	0.90	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)	48	2	18	182	39	130	216	560	77	136	1285	252
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	50	18	0	221	130	216	637	0	136	1537	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)	28.0	28.0		28.0	28.0	28.0	23.0	58.0		22.0	57.0	
Total Split (%)	25.9%	25.9%		25.9%	25.9%	25.9%	21.3%	53.7%		20.4%	52.8%	
Maximum Green (s)	22.0	22.0		22.0	22.0	22.0	17.0	52.0		16.0	51.0	
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)		17.3	37.3		19.3	19.3	15.5	52.6		12.1	49.3	
Actuated g/C Ratio		0.17	0.36		0.19	0.19	0.15	0.51		0.12	0.48	
v/c Ratio		0.39	0.03		0.85	0.33	0.84	0.36		0.67	0.92	
Control Delay		47.0	3.7		70.2	13.7	70.4	15.8		60.2	34.7	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		47.0	3.7		70.2	13.7	70.4	15.8		60.2	34.7	
LOS		D	A		E	B	E	B		E	C	



# 7: Lowell Road (Route 3A) & Executive Drive Lanes, Volumes, Timings

2034 Build + Improvements + Optimization AM

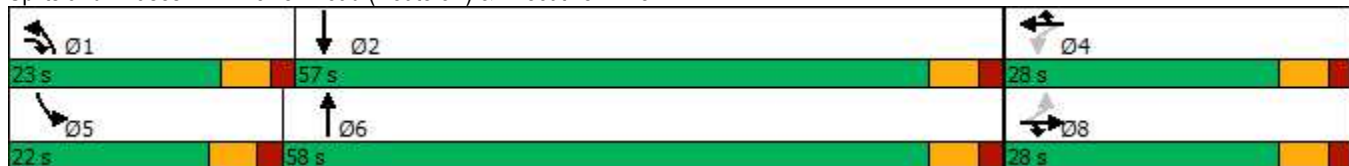


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		35.6			49.3			29.6				36.8
Approach LOS		D			D			C				D
Queue Length 50th (ft)		30	0		146	15	146	129		92		505
Queue Length 95th (ft)		68	9		#269	66	#268	182		152		#676
Internal Link Dist (ft)		412			497			1711				1088
Turn Bay Length (ft)			225			80	350			150		
Base Capacity (vph)		163	658		298	433	287	1817		273		1753
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	0.03		0.74	0.30	0.75	0.35		0.50		0.88

## Intersection Summary

Area Type:	Other
Cycle Length:	108
Actuated Cycle Length:	102.2
Natural Cycle:	90
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.92
Intersection Signal Delay:	36.2
Intersection LOS:	D
Intersection Capacity Utilization:	83.1%
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: 7: Lowell Road (Route 3A) & Executive Drive



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

## Lanes, Volumes, Timings

2034 Build + Improvements + Optimization AM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕	↗	↗	↕↗		↗	↗	
Traffic Volume (vph)	13	0	56	7	0	12	5	637	1	19	1467	3
Future Volume (vph)	13	0	56	7	0	12	5	637	1	19	1467	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	0.90	0.90	0.90	0.90	0.90	0.90	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	62	8	0	13	5	700	1	20	1544	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	14	62	0	8	13	5	701	0	20	1547	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	18.5	5.1	145.3		6.3	153.1	
Actuated g/C Ratio		0.04	0.04		0.04	0.10	0.03	0.81		0.04	0.85	
v/c Ratio		0.30	0.43		0.16	0.06	0.10	0.26		0.32	0.98	
Control Delay		100.2	13.6		90.1	0.5	89.8	6.4		97.4	31.0	

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

### Lanes, Volumes, Timings

2034 Build + Improvements + Optimization AM

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	
Fr <sub>t</sub>	
Fl <sub>t</sub> Protected	
Satd. Flow (prot)	
Fl <sub>t</sub> 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	

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

## Lanes, Volumes, Timings

2034 Build + Improvements + Optimization AM

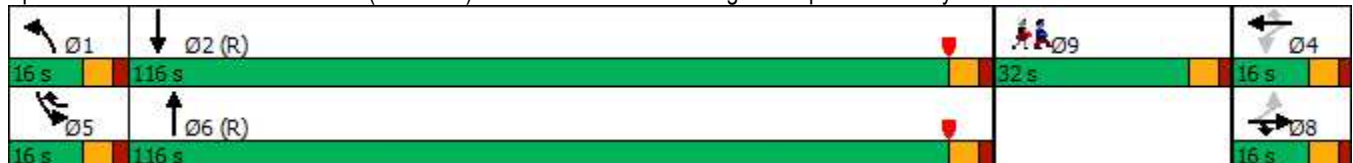


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	36.1	
Total Delay		100.2	13.6		90.1	0.5	89.8	6.4		97.4	67.1	
LOS		F	B		F	A	F	A		F	E	
Approach Delay		29.6			34.6			6.9			67.5	
Approach LOS		C			C			A			E	
Queue Length 50th (ft)		17	0		9	0	6	76		24	750	
Queue Length 95th (ft)		45	20		30	0	23	236		57	#2569	
Internal Link Dist (ft)		518			182			1325			469	
Turn Bay Length (ft)			50			100	210			125		
Base Capacity (vph)		75	173		81	254	96	2708		100	1584	
Starvation Cap Reductn		0	0		0	0	0	0		0	163	
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	0.36		0.10	0.05	0.05	0.26		0.20	1.09	

### 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: 0.98  
 Intersection Signal Delay: 47.9  
 Intersection LOS: D  
 Intersection Capacity Utilization 100.7%  
 ICU Level of Service G  
 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



## 8: Lowell Road (Route 3A) & Fox Hollow Drive/Nottingham Square Driveway Lanes, Volumes, Timings

2034 Build + Improvements + Optimization AM

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	

**2034 Build with Proposed Improvements Weekday P.M.**

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

Lanes, Volumes, Timings

2034 Build with Improvements PM



Lane Group	EBL	EBR	EBR2	NBL	NBT	NBR	SBL	SBT	SBR	NWL2	NWL	NWR
Lane Configurations												
Traffic Volume (vph)	41	2	2	1	666	1	994	450	15	5	0	732
Future Volume (vph)	41	2	2	1	666	1	994	450	15	5	0	732
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	0.97	1.00	1.00	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	3268	1872	0	0	1805	1615
Flt Permitted	0.950			0.950			0.950				0.950	
Satd. Flow (perm)	1668	1507	0	1685	3610	0	3268	1872	0	0	1805	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		191						2				274
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	0.90	0.90	0.90	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)	46	2	2	1	732	1	1104	500	17	5	0	804
Shared Lane Traffic (%)												
Lane Group Flow (vph)	46	4	0	1	733	0	1104	517	0	0	5	804
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)	22.0	22.0		16.0	32.0		51.0	67.0		15.0	15.0	
Total Split (%)	18.3%	18.3%		13.3%	26.7%		42.5%	55.8%		12.5%	12.5%	
Maximum Green (s)	16.0	16.0		10.0	26.0		45.0	61.0		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	30.9		49.0	83.5			9.7	59.9
Actuated g/C Ratio	0.07	0.07		0.05	0.26		0.41	0.70			0.08	0.50
v/c Ratio	0.38	0.01		0.01	0.79		0.83	0.40			0.03	0.85
Control Delay	61.1	0.0		55.0	50.1		19.7	3.0			52.2	25.2
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Total Delay	61.1	0.0		55.0	50.1		19.7	3.0			52.2	25.2
LOS	E	A		D	D		B	A			D	C

# 1: River Road (Route 3A)/Lowell Road (Route 3A) & Dracut Road & Steele Road

## Lanes, Volumes, Timings

2034 Build with Improvements PM

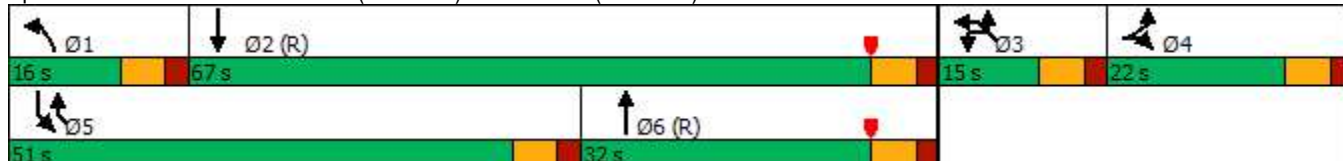


Lane Group	EBL	EBR	EBR2	NBL	NBT	NBR	SBL	SBT	SBR	NWL2	NWL	NWR
Approach Delay	56.2				50.1			14.4			25.4	
Approach LOS	E				D			B			C	
Queue Length 50th (ft)	35	0		1	295		120	65			4	263
Queue Length 95th (ft)	72	0		7	#413		248	176			17	#406
Internal Link Dist (ft)	511				678			1653			542	
Turn Bay Length (ft)		50		200			775				100	
Base Capacity (vph)	222	366		140	929		1341	1303			145	946
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	0.01		0.01	0.79		0.82	0.40			0.03	0.85

### 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: 90  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.85  
 Intersection Signal Delay: 26.0  
 Intersection LOS: C  
 Intersection Capacity Utilization 75.1%  
 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: 1: River Road (Route 3A)/Lowell Road (Route 3A) & Dracut Road & Steele Road





## 2: Lowell Road (Route 3A) & Site Driveway/Rena Avenue Lanes, Volumes, Timings

2034 Build with Improvements PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	293	0	58	1	0	17	40	1412	6	27	1391	243
Future Volume (vph)	293	0	58	1	0	17	40	1412	6	27	1391	243
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	0.91	0.91
Frt		0.850			0.872			0.999			0.978	
Flt Protected	0.950				0.998		0.950			0.950		
Satd. Flow (prot)	3268	1507	0	0	1709	0	1685	3606	0	1805	5073	0
Flt Permitted	0.950				0.998		0.950			0.950		
Satd. Flow (perm)	3268	1507	0	0	1709	0	1685	3606	0	1805	5073	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		355			136						38	
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	0.90	0.90	0.90	0.90	0.90	0.90	0.93	0.93	0.93	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	326	0	64	1	0	19	43	1518	6	30	1546	270
Shared Lane Traffic (%)												
Lane Group Flow (vph)	326	64	0	0	20	0	43	1524	0	30	1816	0
Turn Type	Split	NA		Split	NA		Prot	NA		Prot	NA	
Protected Phases	3	3		4	4		1	6		5	2	
Permitted Phases												
Detector Phase	3	3		4	4		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		11.0	11.0		27.0	61.0		27.0	61.0	
Total Split (%)	17.5%	17.5%		9.2%	9.2%		22.5%	50.8%		22.5%	50.8%	
Maximum Green (s)	15.0	15.0		5.0	5.0		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	Lead		Lag	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	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	4.0	
Recall Mode	None	None		None	None		None	C-Min		None	C-Min	
Act Effct Green (s)	15.3	15.3			5.6		9.5	79.0		8.5	75.3	
Actuated g/C Ratio	0.13	0.13			0.05		0.08	0.66		0.07	0.63	
v/c Ratio	0.78	0.13			0.10		0.33	0.64		0.24	0.57	
Control Delay	64.7	0.5			0.9		63.1	14.9		67.3	5.9	
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay	64.7	0.5			0.9		63.1	14.9		67.3	5.9	
LOS	E	A			A		E	B		E	A	

## 2: Lowell Road (Route 3A) & Site Driveway/Rena Avenue Lanes, Volumes, Timings

2034 Build with Improvements PM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		54.2			0.9			16.2				6.9
Approach LOS		D			A			B				A
Queue Length 50th (ft)	128	0			0		33	232		25		73
Queue Length 95th (ft)	#195	0			0		m40	702		m45		93
Internal Link Dist (ft)		430			477			1653				900
Turn Bay Length (ft)							300			350		
Base Capacity (vph)	423	504			209		294	2372		315		3198
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	0.77	0.13			0.10		0.15	0.64		0.10		0.57

### 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: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.78

Intersection Signal Delay: 15.5

Intersection LOS: B

Intersection Capacity Utilization 64.2%

ICU Level of Service C

Analysis Period (min) 15

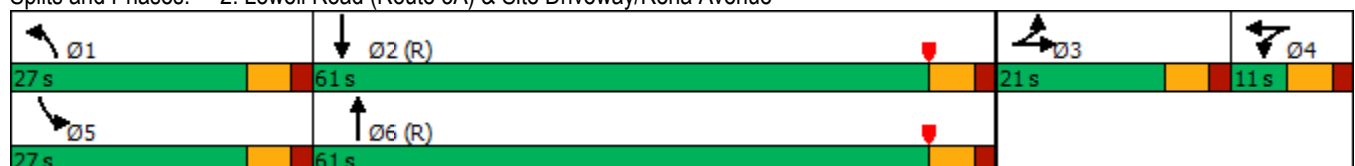
Description: NHDOT Int. No.: S-229-03

# 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



### 3: Lowell Road (Route 3A) & Sam's Club Driveway/Walmart Driveway Lanes, Volumes, Timings

2034 Build with Improvements PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 		 	 		 	 	  		  		
Traffic Volume (vph)	309	15	131	102	23	283	110	1540	86	360	1441	250
Future Volume (vph)	309	15	131	102	23	283	110	1540	86	360	1441	250
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		400
Storage Lanes	2		1	2		1	2		0	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	0.91	0.91	0.97	0.91	1.00
Fr <sub>t</sub>			0.850			0.850		0.992				0.850
Fl <sub>t</sub> Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3335	1963	1615	3502	1900	1669	3467	5097	0	3502	5085	1538
Fl <sub>t</sub> Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3335	1963	1615	3502	1900	1669	3467	5097	0	3502	5085	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			136			136		10				275
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	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.91	0.91	0.91
Heavy Vehicles (%)	5%	0%	0%	0%	0%	0%	1%	1%	0%	0%	2%	5%
Adj. Flow (vph)	343	17	146	113	26	314	122	1711	96	396	1584	275
Shared Lane Traffic (%)												
Lane Group Flow (vph)	343	17	146	113	26	314	122	1807	0	396	1584	275
Turn Type	Prot	NA	pt+ov	Prot	NA	pt+ov	Prot	NA		Prot	NA	pt+ov
Protected Phases	7	4	4 1	3	8	8 5	1	6		5	2	2 7
Permitted Phases												
Detector Phase	7	4	4 1	3	8	8 5	1	6		5	2	2 7
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)	22.0	23.0		15.0	16.0		12.0	63.0		19.0	70.0	
Total Split (%)	18.3%	19.2%		12.5%	13.3%		10.0%	52.5%		15.8%	58.3%	
Maximum Green (s)	16.0	17.0		9.0	10.0		6.0	57.0		13.0	64.0	
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	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	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	4.0	4.0		4.0	4.0		4.0	6.0		4.0	6.0	
Recall Mode	None	None		None	None		None	C-Min		None	C-Min	
Act Effct Green (s)	15.6	16.8	29.3	8.7	9.9	29.4	6.4	57.0		13.4	64.0	85.6
Actuated g/C Ratio	0.13	0.14	0.24	0.07	0.08	0.24	0.05	0.48		0.11	0.53	0.71
v/c Ratio	0.79	0.06	0.29	0.44	0.17	0.61	0.66	0.74		1.01	0.58	0.23
Control Delay	64.6	45.4	9.0	59.0	53.9	28.3	65.5	22.6		90.6	14.6	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	64.6	45.4	9.0	59.0	53.9	28.3	65.5	22.6		90.6	14.6	0.2
LOS	E	D	A	E	D	C	E	C		F	B	A

### 3: Lowell Road (Route 3A) & Sam's Club Driveway/Walmart Driveway Lanes, Volumes, Timings

2034 Build with Improvements PM

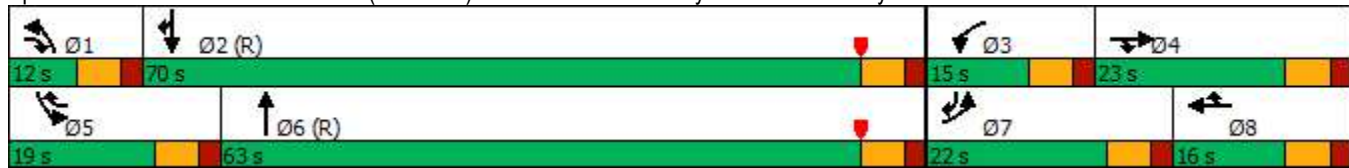


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		47.9			37.4			25.4			26.2	
Approach LOS		D			D			C			C	
Queue Length 50th (ft)	134	12	6	43	19	122	48	164		~173	233	0
Queue Length 95th (ft)	#196	34	59	74	49	224	m#81	305		m#182	m259	m0
Internal Link Dist (ft)		321			369			900			1109	
Turn Bay Length (ft)	175		175	150		200	350			350		400
Base Capacity (vph)	444	278	484	262	158	496	186	2426		392	2712	1180
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.77	0.06	0.30	0.43	0.16	0.63	0.66	0.74		1.01	0.58	0.23

#### 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: 80  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.01  
 Intersection Signal Delay: 29.0  
 Intersection LOS: C  
 Intersection Capacity Utilization 73.0%  
 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



#### 4: Lowell Road (Route 3A) & Sagamore Bridge Road Lanes, Volumes, Timings

2034 Build with Improvements PM



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	1677	1562	1402	752	549	1415
Future Volume (vph)	1677	1562	1402	752	549	1415
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	0.94	0.95	0.95	0.88
Fr <sub>t</sub>		0.850				0.850
Fl <sub>t</sub> Protected	0.950		0.950			
Satd. Flow (prot)	3698	1689	5040	3610	3610	2814
Fl <sub>t</sub> Permitted	0.950		0.950			
Satd. Flow (perm)	3698	1689	5040	3610	3610	2814
Right Turn on Red		No				Yes
Satd. Flow (RTOR)						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	0.90	0.90
Heavy Vehicles (%)	1%	2%	1%	0%	0%	1%
Adj. Flow (vph)	1747	1627	1491	800	610	1572
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1747	1627	1491	800	610	1572
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)	53.0		40.0	67.0	27.0	
Total Split (%)	44.2%		33.3%	55.8%	22.5%	
Maximum Green (s)	47.0		32.0	60.0	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)	47.0	120.0	32.0	60.0	20.0	120.0
Actuated g/C Ratio	0.39	1.00	0.27	0.50	0.17	1.00
v/c Ratio	1.21	0.96	1.11	0.44	1.01	0.56
Control Delay	133.3	16.8	90.8	16.1	76.3	2.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	133.3	16.8	90.8	16.1	76.3	2.9
LOS	F	B	F	B	E	A

# 4: Lowell Road (Route 3A) & Sagamore Bridge Road Lanes, Volumes, Timings

2034 Build with Improvements PM

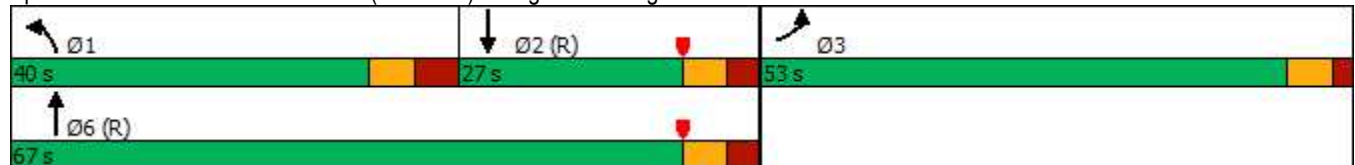


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Approach Delay	77.1			64.7	23.4	
Approach LOS	E			E	C	
Queue Length 50th (ft)	~850	0	~482	234	~271	93
Queue Length 95th (ft)	#987	#164	#566	285	m#380	94
Internal Link Dist (ft)	849			1109	919	
Turn Bay Length (ft)			525			200
Base Capacity (vph)	1448	1689	1344	1805	601	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	1.21	0.96	1.11	0.44	1.01	0.56

## Intersection Summary

Area Type: Other  
 Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow  
 Natural Cycle: 150  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.21  
 Intersection Signal Delay: 58.5  
 Intersection LOS: E  
 Intersection Capacity Utilization 106.3%  
 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.  
 m Volume for 95th percentile queue is metered by upstream signal.
























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



# 5: Lowell Road (Route 3A) & Flagstone Drive/Wason Road

## Lanes, Volumes, Timings

2034 Build with Improvements PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	54	100	482	489	19	31	154	1184	1116	81	1024	5
Future Volume (vph)	54	100	482	489	19	31	154	1184	1116	81	1024	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	0		2	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	0.88	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	2842	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	2842	1805	5131	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			82			136			562			1
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		805			586			999			427	
Travel Time (s)		18.3			13.3			22.7			9.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.94	0.94	0.94	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	1%	0%	0%	1%	1%	1%	0%	0%	1%	0%
Adj. Flow (vph)	60	111	536	543	21	34	164	1260	1187	90	1138	6
Shared Lane Traffic (%)				48%								
Lane Group Flow (vph)	0	171	536	282	282	34	164	1260	1187	90	1144	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)	22.0	22.0	34.0	28.0	28.0	15.0	34.0	55.0	28.0	15.0	36.0	
Total Split (%)	18.3%	18.3%	28.3%	23.3%	23.3%	12.5%	28.3%	45.8%	23.3%	12.5%	30.0%	
Maximum Green (s)	16.0	16.0	28.0	22.0	22.0	9.0	28.0	49.0	22.0	9.0	30.0	
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	C-Min	None	None	C-Min	
Act Effct Green (s)		14.3	45.0	22.8	22.8	31.5	24.7	50.2	79.0	8.7	34.1	
Actuated g/C Ratio		0.12	0.38	0.19	0.19	0.26	0.21	0.42	0.66	0.07	0.28	
v/c Ratio		0.77	0.82	0.90	0.89	0.07	0.45	0.84	0.58	0.69	0.78	
Control Delay		73.2	39.4	78.6	77.6	0.3	58.6	31.9	2.8	81.1	44.7	
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay		73.2	39.4	78.6	77.6	0.3	58.6	31.9	2.8	81.1	44.7	
LOS		E	D	E	E	A	E	C	A	F	D	

# 5: Lowell Road (Route 3A) & Flagstone Drive/Wason Road Lanes, Volumes, Timings

2034 Build with Improvements PM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		47.6			73.7			20.3				47.4
Approach LOS		D			E			C				D
Queue Length 50th (ft)		128	313	228	228	0	132	293	37	69		302
Queue Length 95th (ft)		#218	446	#404	#402	0	m140	m258	m39	#146		#381
Internal Link Dist (ft)		725			506			919				347
Turn Bay Length (ft)			250	200		75	575		275	175		
Base Capacity (vph)		249	693	314	316	511	416	1494	2063	136		1460
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		0.69	0.77	0.90	0.89	0.07	0.39	0.84	0.58	0.66		0.78

## 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: 0.90

Intersection Signal Delay: 36.8

Intersection LOS: D

Intersection Capacity Utilization 78.8%

ICU Level of Service D

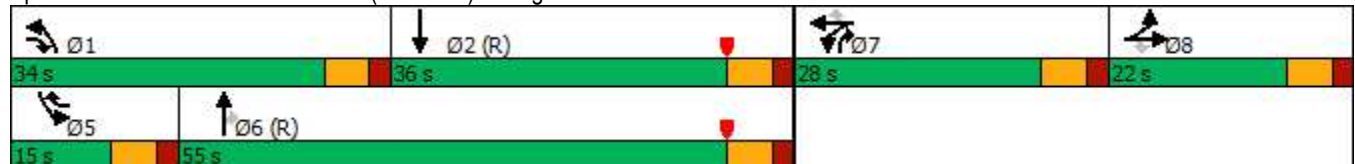
Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

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


























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

## Lanes, Volumes, Timings

2034 Build + Improvements + Optimization PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	2	29	36	0	56	31	1353	17	65	798	13
Future Volume (vph)	10	2	29	36	0	56	31	1353	17	65	798	13
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		0.959			0.950		0.950			0.950		
Satd. Flow (prot)	0	1822	1583	0	1865	1669	1745	3449	0	1805	1878	0
Flt Permitted		0.731			0.749		0.950			0.950		
Satd. Flow (perm)	0	1389	1583	0	1471	1669	1745	3449	0	1805	1878	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			91			62		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	0.90	0.90	0.90	0.90	0.90	0.90	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	2	32	40	0	62	31	1367	17	69	849	14
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	13	32	0	40	62	31	1384	0	69	863	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)		8.2	8.2		8.2	21.1	7.0	140.5		9.1	146.1	
Actuated g/C Ratio		0.05	0.05		0.05	0.12	0.04	0.78		0.05	0.81	
v/c Ratio		0.21	0.20		0.61	0.25	0.46	0.51		0.76	0.57	
Control Delay		89.5	2.9		119.1	16.1	105.6	10.5		126.5	12.2	

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

### Lanes, Volumes, Timings

2034 Build + Improvements + Optimization PM

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	

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

## Lanes, Volumes, Timings

2034 Build + Improvements + Optimization PM

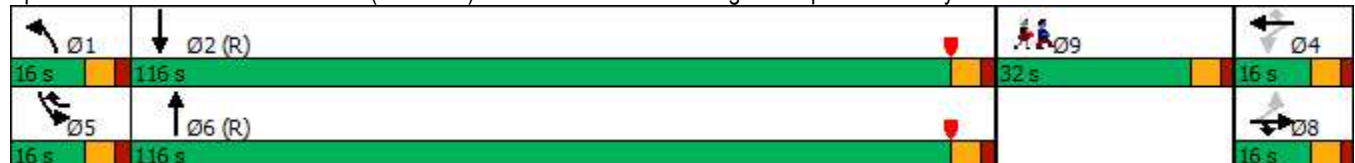


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	3.2	
Total Delay		89.5	2.9		119.1	16.1	105.6	10.5		126.5	15.4	
LOS		F	A		F	B	F	B		F	B	
Approach Delay		27.9			56.5			12.6			23.6	
Approach LOS		C			E			B			C	
Queue Length 50th (ft)		15	0		47	0	37	260		82	304	
Queue Length 95th (ft)		42	0		94	49	77	615		#164	892	
Internal Link Dist (ft)		518			182			1325			469	
Turn Bay Length (ft)			50			100	210			125		
Base Capacity (vph)		77	173		81	258	96	2692		100	1524	
Starvation Cap Reductn		0	0		0	0	0	0		0	540	
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		0.17	0.18		0.49	0.24	0.32	0.51		0.69	0.88	

### 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: 0.76  
 Intersection Signal Delay: 18.8  
 Intersection LOS: B  
 Intersection Capacity Utilization 70.6%  
 ICU Level of Service C  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

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



## 8: Lowell Road (Route 3A) & Fox Hollow Drive/Nottingham Square Driveway Lanes, Volumes, Timings

2034 Build + Improvements + Optimization PM

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	

# 9: Lowell Road (Route 3A) & Pelham Road Lanes, Volumes, Timings

2034 Build + Improvements + Optimization PM



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø9
Lane Configurations							
Traffic Volume (vph)	96	160	1286	123	124	786	
Future Volume (vph)	96	160	1286	123	124	786	
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	
Fr <sub>t</sub>		0.850	0.988				
Fl <sub>t</sub> Protected	0.950				0.950		
Satd. Flow (prot)	1805	850	1922	0	1805	1881	
Fl <sub>t</sub> Permitted	0.950				0.950		
Satd. Flow (perm)	1805	850	1922	0	1805	1881	
Right Turn on Red		Yes		Yes			
Satd. Flow (RTOR)		178	3				
Link Speed (mph)	20		30			30	
Link Distance (ft)	512		549			1309	
Travel Time (s)	17.5		12.5			29.8	
Peak Hour Factor	0.90	0.90	0.98	0.98	0.90	0.90	
Heavy Vehicles (%)	0%	0%	1%	0%	0%	1%	
Adj. Flow (vph)	107	178	1312	126	138	873	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	107	178	1438	0	138	873	
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)	60.0		64.0		31.0	95.0	35.0
Total Split (%)	31.6%		33.7%		16.3%	50.0%	18%
Maximum Green (s)	54.0		58.0		25.0	89.0	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)	15.3	39.6	131.4		18.3	155.7	
Actuated g/C Ratio	0.08	0.21	0.69		0.10	0.82	
v/c Ratio	0.74	0.56	1.08		0.79	0.57	
Control Delay	112.8	13.6	77.7		113.3	10.6	

# 9: Lowell Road (Route 3A) & Pelham Road Lanes, Volumes, Timings

2034 Build + Improvements + Optimization PM

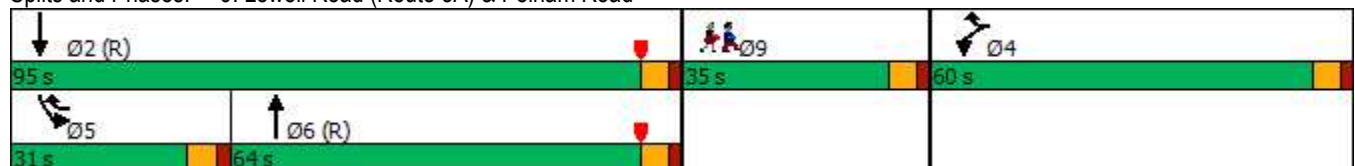


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø9
Queue Delay	0.0	0.0	8.1		0.0	0.0	
Total Delay	112.8	13.6	85.8		113.3	10.6	
LOS	F	B	F		F	B	
Approach Delay	50.8		85.8			24.7	
Approach LOS	D		F			C	
Queue Length 50th (ft)	133	0	~1907		172	242	
Queue Length 95th (ft)	202	78	#2807		248	883	
Internal Link Dist (ft)	432		469			1229	
Turn Bay Length (ft)		75			150		
Base Capacity (vph)	513	368	1329		237	1541	
Starvation Cap Reductn	0	0	204		0	0	
Spillback Cap Reductn	0	0	0		0	0	
Storage Cap Reductn	0	0	0		0	0	
Reduced v/c Ratio	0.21	0.48	1.28		0.58	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: 1.08  
 Intersection Signal Delay: 59.5  
 Intersection LOS: E  
 Intersection Capacity Utilization 104.0%  
 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 J**

**Capacity Analyses Comparison**

OPENING YEAR CAPACITY ANALYSIS COMPARISON (APPROVED VS AMENDED) – WEEKDAY A.M. PEAK-HOUR

INTERSECTION	CONTROL TYPE	2022 WITH IMPROVEMENTS BUILD AM					2024 BUILD WITH IMPROVEMENTS AM						
		LOS	DELAY (sec)	V/C RATIO	QUEUES (ft)		LANE USE	STORAGE LENGTH (ft)	LOS	DELAY (sec)	V/C RATIO	QUEUES (ft)	
					50th%	95th%						50th%	95th%
River Road (route 3a)/ Lowell Road (route 3a) & Dracut Road & Steele Road	ACTUATED-COORDINATED	<b>B</b>	<b>17.3</b>	<b>0.86</b>			<b>Overall</b>		<b>B</b>	<b>17.4</b>	<b>0.86</b>		
		D	40	0.03	2'	9'	EB-L	±590'	D	40	0.02	1'	8'
		A	0	0.01	0'	0'	EB-RR	50'	A	0	0	0'	0'
		A	0	0	0'	0'	NB-L	200'	O	0	0	0'	0'
		C	34.1	0.41	88'	127'	NB-TTR	±760'	C	29.8	0.31	73'	133'
		C	24.4	0.38	110'	101'	SB-LL	775'	C	27.8	0.44	134'	101'
		A	3.8	0.41	3'	7'	SB-TR	±1730'	A	3.4	0.42	3'	8'
		D	37	0.01	1'	5'	NWB-LL	100'	D	37	0.01	1'	5'
		B	15.3	0.86	161'	287'	NWB-R		B	16	0.86	168'	#314'
Lowell Road (route 3a) & Site Driveway/ Rena Avenue	ACTUATED-COORDINATED	<b>B</b>	<b>12.4</b>	<b>0.55</b>			<b>Overall</b>		<b>B</b>	<b>13.2</b>	<b>0.55</b>		
		D	38.2	0.51	46'	72'	EB-LL		D	47.2	0.54	58'	#138'
		A	0.3	0.07	0'	0'	EB-TR	±510'	A	0.3	0.07	0'	0'
		C	20.5	0.3	1'	30'	WB-LTR	±560'	C	20.4	0.29	1'	32'
		D	41.3	0.3	27'	57'	NB-L	300'	D	42.7	0.3	29'	m39'
		A	9.7	0.55	202'	314'	NB-TTR	±1730'	A	10.2	0.55	195'	264'
		D	37.6	0.06	4'	10'	SB-L	350'	D	37.9	0.05	4'	m10'
		B	12.1	0.48	98'	131'	SB-TTTR	±980'	B	9.6	0.47	72'	73'
		A	1.5	0.25	0'	12'							
Lowell Road (route 3a) & Sam's Club Driveway/ Walmart Driveway	ACTUATED-COORDINATED	<b>B</b>	<b>15</b>	<b>0.54</b>			<b>Overall</b>		<b>B</b>	<b>15</b>	<b>0.54</b>		
		D	45.6	0.5	40'	70'	EB-LL	175'	D	47.4	0.54	41'	72'
		D	36.2	0.01	2'	12'	EB-T	±400'	D	36	0.01	2'	12'
		A	1.8	0.11	0'	9'	EB-R	175'	A	1.7	0.11	0'	9'
		D	38.7	0.06	4'	14'	WB-LL	150'	D	38.8	0.07	5'	15'
		D	38.4	0.04	3'	14'	WB-T	±450'	D	38.2	0.04	3'	15'
		A	3.9	0.19	0'	19'	WB-R	200'	A	4.2	0.2	0'	22'
		D	44.9	0.28	28'	50'	NB-LL	350'	D	44.4	0.23	23'	m41'
		B	13.2	0.54	142'	137'	NB-TTTR	±980'	B	12.8	0.54	151'	143'
		D	47.2	0.28	25'	35'	SB-LL	350'	D	47.5	0.29	26'	m38'
		B	11.9	0.45	112'	240'	SB-TTT	±1190'	B	11.6	0.45	111'	251'
		A	0.5	0.16	0'	1'	SB-R	400'	A	0.5	0.1	0'	m0'
		Lowell Road (route 3a) & Sagamore Bridge Road	ACTUATED-COORDINATED	<b>B</b>	<b>15.3</b>	<b>0.83</b>			<b>Overall</b>		<b>B</b>	<b>15.9</b>	<b>0.86</b>
C	33.7			0.82	259'	334'	EB-LL	±930'	C	34.4	0.84	276'	355'
A	2.5			0.7	0'	0'	EB-R		A	2.2	0.67	0'	0'
C	25.7			0.83	221'	231'	NB-LLL	525'	C	26.2	0.86	215'	#250'
A	4.4			0.22	16'	12'	NB-TT	±1190'	A	4.5	0.23	17'	14'
C	33.6			0.77	118'	132'	SB-TT	±1000'	C	34.7	0.8	116'	m129'
Lowell Road (route 3a) & Flagstone Drive/ Wason Road	ACTUATED-UNCOORDINATED	<b>D</b>	<b>47.3</b>	<b>0.97</b>			<b>Overall</b>		<b>D</b>	<b>47.6</b>	<b>1.01</b>		
		F	112.3	0.94	66'	147'	EB-LT	±810'	F	89.1	0.83	58'	#148'
		C	22.1	0.6	111'	168'	EB-R	250'	C	20.2	0.55	95'	179'
		E	72.8	0.95	205'	382'	WB-L	200'	E	77	0.97	210'	#390'
		E	73.2	0.95	208'	386'	WB-LT	±590'	E	77.5	0.97	213'	#397'
		A	0.2	0.06	0'	0'	WB-R	75'	A	0.2	0.06	0'	0'
		F	81.3	0.95	198'	319'	NB-L	575'	F	93.3	1.01	~213'	m#333'
		B	19.3	0.55	125'	198'	NB-TT	±1000'	C	20.4	0.58	138'	230'
		A	0.1	0.1	0'	0'	NB-RR	275'	A	0.1	0.1	0'	m0'
		D	44.9	0.18	9'	29'	SB-L	175'	D	45.2	0.19	10'	32'
Lowell Road (route 3a) & Hampshire Drive/ Oblate Drive	ACTUATED-UNCOORDINATED	<b>B</b>	<b>13</b>	<b>0.67</b>			<b>Overall</b>		<b>B</b>	<b>11.3</b>	<b>0.65</b>		
		D	44.1	0.06	4'	22'	EB-LT	±500'	D	38.5	0.05	2'	22'
		A	0.4	0.05	0'	0'	EB-R	100'	A	0.2	0.04	0'	0'
		D	46.4	0.04	2'	16'	WB-LT	±380'	D	41.5	0.02	1'	14'
		A	0.2	0.02	0'	0'	WB-R	100'	A	0	0.02	0'	0'
		D	47.4	0.54	46'	174'	NB-L	225'	D	40	0.51	36'	#190'
		A	5	0.29	0'	203'	NB-TTR	±1520'	A	4.3	0.29	0'	211'
Lowell Road (route 3a) & Executive Drive	ACTUATED-UNCOORDINATED	<b>C</b>	<b>30.3</b>	<b>0.93</b>			<b>Overall</b>		<b>C</b>	<b>31.4</b>	<b>1.02</b>		
		D	52.3	0.47	24'	59'	EB-LT	±490'	D	50.1	0.43	23'	64'
		A	3.3	0.03	0'	4'	EB-R	225'	A	4.7	0.04	0'	10'
		E	72.7	0.88	120'	239'	WB-LT	±580'	E	71	0.86	112'	#267'
		B	14.3	0.34	12'	52'	WB-R	80'	B	13.4	0.33	8'	61'
		F	94.3	0.93	105'	278'	NB-L	350'	F	113.1	1.02	~127'	#305'
		B	12.5	0.32	92'	126'	NB-TTR	±1790'	B	12.3	0.32	95'	128'
		E	61.9	0.67	66'	167'	SB-L	150'	E	62.2	0.68	70'	#175'
Lowell Road (route 3a) & Fox Hollow Drive/ Nottingham Square Driveway	ACTUATED-COORDINATED	<b>C</b>	<b>33.6</b>	<b>0.88</b>			<b>Overall</b>		<b>C</b>	<b>27.6</b>	<b>0.87</b>		
		F	100.2	0.3	17'	40'	EB-LT	±600'	F	98.4	0.28	15'	42'
		B	12.4	0.42	0'	3'	EB-R	50'	B	10.4	0.39	0'	10'
		F	90.2	0.16	9'	27'	WB-LT	±260'	F	89.2	0.14	8'	27'
		A	0.5	0.06	0'	0'	WB-R	100'	A	0.5	0.06	0'	0'
		F	89	0.08	5'	20'	NB-L	210'	F	89	0.08	5'	20'
		A	5.8	0.23	65'	517'							
		A	0	0	0'	0'	NB-TTR	±1410'	A	5.6	0.23	67'	211'
Lowell Road (route 3a) & Pelham Road	ACTUATED-COORDINATED	<b>D</b>	<b>55</b>	<b>1.4</b>			<b>Overall</b>		<b>D</b>	<b>54.4</b>	<b>1.39</b>		
		F	265.8	1.4	439'	620'	WB-L	±510'	F	261.9	1.39	~434'	#636'
		E	57.8	0.51	62'	125'	WB-R	75'	E	57.8	0.51	62'	129'
		B	18.1	0.47	258'	619'	NB-TR	±550'	B	18.9	0.49	271'	648'
		F	211	1.06	91'	210'	SB-L	150'	F	214.6	1.08	~94'	#213'
		B	17.8	0.78	548'	1690'	SB-T	±1310'	B	18.1	0.79	564'	#1726'



OPENING YEAR CAPACITY ANALYSIS COMPARISON (APPROVED VS AMENDED) – WEEKDAY P.M. PEAK HOUR

INTERSECTION	CONTROL TYPE	2022 BUILD PM WITH IMPROVEMENTS					2024 BUILD WITH IMPROVEMENTS PM						
		LOS	DELAY (sec)	V/C RATIO	QUEUES (ft)		LANE USE	STORAGE LENGTH (ft)	LOS	DELAY (sec)	V/C RATIO	QUEUES (ft)	
					50th%	95th%						50th%	95th%
River Road (route 3a)/ Lowell Road (route 3a) & Dracut Road & Steele Road	ACTUATED-COORDINATED	C	23.2	0.79			Overall		C	22.6	0.79		
		E	61.1	0.38			EB-L	±590'	E	60.7	0.35	31'	67'
		A	0.2	0.02	0'	0'	EB-RR	50'	A	0	0.01	0'	0'
		D	55	0.01	1'	7'	NB-L	200'	D	55	0.01	1'	7'
		D	44.2	0.66	243'	334'	NB-TTR	±760'	D	45	0.68	249'	#354'
		B	19.2	0.79	121'	61'	SB-LL	775'	B	17.7	0.79	119'	71'
		A	3.1	0.35	59'	178'	SB-TR	±1730'	A	3.3	0.36	58'	162'
		D	52	0.03	3'	15'	NWB-LL	100'	D	52	0.02	3'	15'
		B	19.9	0.78	197'	371'	NWB-R		B	19.1	0.78	195'	368'
Lowell Road (route 3a) & Site Driveway/ Rena Avenue	ACTUATED-COORDINATED	B	15.3	0.73			Overall		B	15	0.73		
		E	56.4	0.73	128'	147'	EB-LL		E	60.5	0.77	120'	#190'
		A	0.5	0.12	0'	0'	EB-TR	±510'	A	0.5	0.12	0'	0'
		A	0.9	0.1	0'	0'	WB-LTR	±560'	A	0.8	0.09	0'	0'
		E	57.5	0.3	28'	63'	NB-L	300'	E	65.2	0.33	34'	m45'
		B	14.4	0.57	283'	471'	NB-TTR	±1730'	B	13.6	0.58	200'	617'
		E	68	0.22	22'	45'	SB-L	350'	E	67.9	0.22	22'	m44'
		A	7.8	0.58	87'	115'	SB-TTTR	±980'	A	6	0.62	79'	83'
		A	0.7	0.24	0'	1'							
Lowell Road (route 3a) & Sam's Club Driveway/ Walmart Driveway	ACTUATED-COORDINATED	C	28.3	0.89			Overall		C	26.5	0.9		
		E	73.3	0.89	161'	239'	EB-LL	175'	E	61.4	0.74	121'	170'
		D	45.2	0.05	10'	30'	EB-T	±400'	D	45.4	0.06	11'	32'
		A	9.1	0.3	7'	56'	EB-R	175'	A	7.1	0.27	0'	47'
		E	58.1	0.4	39'	65'	WB-LL	150'	E	58.1	0.4	39'	69'
		D	53.6	0.15	17'	42'	WB-T	±450'	D	53.6	0.15	17'	44'
		C	25	0.56	99'	175'	WB-R	200'	C	24.9	0.56	99'	190'
		E	66.4	0.68	48'	88'	NB-LL	350'	E	63.5	0.61	43'	m#72'
		C	22.9	0.67	246'	250'	NB-TTTR	±980'	C	20.9	0.68	160'	259'
		E	75.2	0.88	139'	154'	SB-LL	350'	E	78.1	0.9	147'	m#176'
		B	13.5	0.52	165'	217'	SB-TTT	±1190'	B	13.6	0.53	179'	m249'
		A	0.2	0.27	0'	0'	SB-R	400'	A	0.2	0.21	0'	m0'
Lowell Road (route 3a) & Sagamore Bridge Road	ACTUATED-COORDINATED	D	40.3	1.06			Overall		D	40.1	1.09		
		E	78.5	1.06	678'	815'	EB-LL	±930'	F	88.9	1.09	~714'	#851'
		A	9.3	0.9	0'	5'	EB-R		A	7.8	0.88	0'	0'
		E	73.4	1.05	433'	523'	NB-LLL	525'	E	61.9	1.02	~410'	#495'
		B	15	0.4	221'	225'	NB-TT	±1190'	B	15.9	0.4	225'	245'
		E	63.8	0.94	245'	342'	SB-TR	±1000'	E	63.5	0.93	243'	m#344'
		A	1.8	0.49	58'	39'	SB-RR	200'	A	2.2	0.51	74'	62'
Lowell Road (route 3a) & Flagstone Drive/ Wason Road	ACTUATED-UNCOORDINATED	C	34.6	0.83			Overall		C	33.7	0.82		
		E	75.6	0.79	136'	188'	EB-LT	±810'	E	72.1	0.75	121'	195'
		D	40.4	0.83	317'	364'	EB-R	250'	D	37.9	0.79	282'	385'
		E	69.2	0.82	198'	344'	WB-L	200'	E	68.5	0.82	203'	#352'
		E	68.5	0.82	198'	343'	WB-LT	±590'	E	67.8	0.82	203'	#351'
		A	0.2	0.06	0'	0'	WB-R	75'	A	0.2	0.06	0'	0'
		E	58.2	0.4	116'	134'	NB-L	575'	E	58.9	0.46	125'	m141'
		C	28.8	0.71	251'	253'	NB-TT	±1000'	C	29.3	0.72	253'	m250'
		A	2.3	0.5	15'	25'	NB-RR	275'	A	2.2	0.5	27'	m28'
		E	77.7	0.65	63'	123'	SB-L	175'	E	76.1	0.64	62'	#129'
D	41.6	0.69	264'	318'	SB-TTTR	±430'	D	39.9	0.66	260'	335'		
Lowell Road (route 3a) & Hampshire Drive/ Oblate Drive	ACTUATED-UNCOORDINATED	B	13.7	0.61			Overall		B	13.3	0.58		
		D	41.6	0.33	10'	48'	EB-LT	±500'	D	39.6	0.28	9'	48'
		A	5.6	0.26	0'	26'	EB-R	100'	A	5.8	0.24	0'	35'
		D	35.6	0.07	4'	24'	WB-LT	±380'	D	35.8	0.07	4'	26'
		A	0	0.02	0'	0'	WB-R	100'	A	0	0.01	0'	0'
		D	37.7	0.12	5'	31'	NB-L	225'	D	37.7	0.13	6'	34'
		B	11.3	0.56	99'	332'	NB-TTR	±1520'	B	11.3	0.58	95'	337'
		D	38	0.05	2'	16'	SB-L	225'	D	38	0.04	2'	17'
B	15.8	0.61	124'	258'	SB-TTR	±1790'	B	15	0.58	121'	275'		
Lowell Road (route 3a) & Executive Drive	ACTUATED-UNCOORDINATED	B	19.6	0.73			Overall		B	19.5	0.69		
		D	39.1	0.73	106'	258'	EB-LT	±490'	D	37.1	0.69	99'	#284'
		A	3.8	0.11	0'	21'	EB-R	225'	A	3.9	0.1	0'	28'
		C	24.3	0.13	10'	33'	WB-LT	±580'	C	24.5	0.12	9'	35'
		A	0.4	0.07	0'	0'	WB-R	80'	A	0.3	0.07	0'	0'
		D	37.2	0.32	21'	63'	NB-L	350'	D	38.4	0.36	25'	69'
		B	14.6	0.62	145'	282'	NB-TTR	±1790'	B	14.5	0.61	146'	284'
		D	36.3	0.13	7'	29'	SB-L	150'	D	36.9	0.14	7'	31'
C	20.3	0.63	148'	215'	SB-TTTR	±1170'	C	20.6	0.65	159'	227'		
Lowell Road (route 3a) & Fox Hollow Drive/ Nottingham Square Driveway	ACTUATED-COORDINATED	B	17.4	0.68			Overall		B	17.5	0.71		
		F	90.1	0.22	16'	40'	EB-LT	±600'	F	88.9	0.19	14'	39'
		A	2.8	0.2	0'	0'	EB-R	50'	A	2.6	0.18	0'	0'
		F	117.7	0.59	46'	81'	WB-LT	±260'	F	115.7	0.57	44'	89'
		B	16.3	0.25	0'	36'	WB-R	100'	B	16.9	0.23	0'	46'
		F	103.9	0.42	32'	70'	NB-L	210'	F	104.3	0.44	33'	71'
		A	9.6	0.46	217'	519'							
		A	0	0	0'	0'	NB-TTR	±1410'	A	9.7	0.01	220'	530'
F	119.5	0.68	71'	134'	SB-L	125'	F	121.8	0.71	74'	#144'		
B	13.2	0.51	250'	741'	SB-TR	±550'	B	13.3	0.51	251'	750'		
Lowell Road (route 3a) & Pelham Road	ACTUATED-COORDINATED	E	72.4	1.88			Overall		E	72.7	1.88		
		F	114.7	0.73	123'	184'	WB-L	±510'	F	114.1	0.72	121'	188'
		C	24.5	0.65	13'	91'	WB-R	75'	C	23.4	0.64	10'	99'
		E	74.5	0.89	904'	2163'	NB-TR	±550'	E	75.1	0.9	937'	#2207'
		F	487.8	1.88	235'	384'	SB-L	150'	F	487.8	1.88	~235'	#390'
A	9.2	0.5	197'	722'	SB-T	±1310'	A	9.1	0.51	193'	730'		

HORIZON YEAR CAPACITY ANALYSIS COMPARISON (APPROVED VS AMENDED) - WEEKDAY A.M. PEAK HOUR

INTERSECTION	CONTROL TYPE	LANE USE	STORAGE LENGTH (ft)	2032 BUILD AM WITH IMPROVEMENTS					LANE USE	STORAGE LENGTH (ft)	2034 BUILD WITH IMPROVEMENTS AM						
				LOS	DELAY (sec)	V/C RATIO	QUEUES (ft)				LOS	DELAY (sec)	V/C RATIO	QUEUES (ft)			
							50th%	95th%						50th%	95th%		
River Road (route 3a)/ Lowell Road (route 3a) & Dracut Road & Steele Road	ACTUATED-COORDINATED	Overall		B	18.3	0.89			Overall		B	15.5	0.83				
		EB-L	±590'	D	40	0.03	2'	9'	EB-L	±590'	D	40	0.02	1'	8'		
		EB-RR	50'	A	0	0.01	0'	0'	EB-RR	50'	A	0	0	0'	0'		
		NB-L	200'	A	0	0	0'	0'	NB-L	200'	D	0	0	0'	0'		
		NB-TTR	±760'	D	43.8	0.7	106'	135'	NB-TTR	±760'	D	46.2	0.71	99'	#147'		
		SB-L	775'	B	17.2	0.36	89'	102'	SB-LL	775'	B	14.8	0.35	95'	102'		
		SB-TTR	±1730'	A	3.4	0.46	3'	8'	SB-TR	±1730'	A	3.3	0.46	4'	9'		
		NWB-LL	100'	D	36	0	1'	5'	NWB-LL	100'	D	37	0.01	1'	5'		
		NWB-R		B	18.8	0.89	215'	774'	NWB-R		B	13.2	0.83	128'	#755'		
		Lowell Road (route 3a) & Site Driveway/ Rena Avenue	ACTUATED-COORDINATED	Overall		B	12.8	0.6			Overall		B	13	0.61		
EB-LT	±510'			D	43.2	0.59	53'	76'	EB-LL		D	51.7	0.61	59'	#138'		
EB-R	50'			A	0.4	0.08	0'	0'	EB-TR	±510'	A	0.3	0.08	0'	0'		
WB-LTR	±560'			B	13.1	0.18	1'	27'	WB-LTR	±560'	C	20.4	0.3	1'	34'		
NB-L	300'			D	41.3	0.3	27'	57'	NB-L	300'	D	41.7	0.31	29'	m35'		
NB-TTR	±1730'			B	10.1	0.6	180'	368'	NB-TTR	±1730'	A	9.6	0.6	166'	448'		
SB-L	350'			D	36.8	0.06	5'	10'	SB-L	350'	D	38	0.06	5'	m10'		
SB-TTR	±980'			B	12.6	0.53	77'	170'	SB-TTR	±980'	B	9.7	0.49	58'	102'		
Lowell Road (route 3a) & Sam's Club Driveway/ Walmart Driveway	ACTUATED-COORDINATED			Overall		B	15.8	0.58			Overall		B	15.9	0.63		
				EB-LL	175'	D	45.6	0.5	40'	70'	EB-LL	175'	D	48.9	0.59	44'	76'
		EB-T	±400'	D	36.5	0.02	2'	12'	EB-T	±400'	D	35.8	0.02	2'	13'		
		EB-R	175'	A	0.9	0.17	0'	0'	EB-R	175'	A	2.4	0.12	0'	13'		
		WB-LL	150'	D	38.7	0.06	4'	14'	WB-LL	150'	D	38.8	0.07	5'	15'		
		WB-T	±450'	D	38.8	0.04	3'	15'	WB-T	±450'	D	38.2	0.05	4'	17'		
		WB-R	200'	A	2.4	0.28	0'	0'	WB-R	200'	A	5.2	0.21	0'	27'		
		NB-LL	350'	D	44.9	0.27	27'	46'	NB-LL	350'	D	44	0.25	24'	m42'		
		NB-TT	±980'	B	13.9	0.58	246'	167'	NB-TTR	±980'	B	14.1	0.63	197'	175'		
		NB-R	175'														
Lowell Road (route 3a) & Sagamore Bridge Road	ACTUATED-COORDINATED	Overall		B	19.9	0.97			Overall		B	19.7	0.96				
		EB-LL	±930'	D	51.3	0.97	320'	457'	EB-LL	±930'	D	39	0.9	317'	#439'		
		EB-R		A	3.4	0.76	0'	0'	EB-R		A	2.9	0.73	0'	0'		
		NB-LL	525'	C	26	0.86	78'	240'	NB-LLL	525'	C	34.7	0.92	260'	#332'		
		NB-TT	±1190'	A	4.4	0.23	11'	16'	NB-TT	±1190'	A	3.9	0.26	16'	16'		
		SB-TT	±1000'	D	49.3	0.79	124'	133'	SB-TT	±1000'	D	44.1	0.96	130'	m131'		
		SB-RR	200'	A	4.6	0.66	261'	269'	SB-RR	200'	A	6.2	0.68	128'	m114'		
		Lowell Road (route 3a) & Flagstone Drive/ Wason Road	ACTUATED-UNCOORDINATED	Overall		E	55.3	1.25			Overall		E	61.5	1.08		
				EB-LT	±810'	F	120.4	0.98	69'	152'	EB-LT	±810'	F	93.5	0.85	60'	#153'
				EB-R	250'	C	28	0.7	134'	197'	EB-R	250'	C	21.7	0.59	108'	198'
WB-L	200'			F	82.8	1	229'	422'	WB-L	200'	F	102.4	1.07	-260'	#444'		
WB-LT	±590'			F	82.5	1	231'	425'	WB-LT	±590'	F	102.7	1.07	-264'	#449'		
WB-R	75'			A	0.2	0.06	0'	0'	WB-R	75'	A	0.2	0.07	0'	0'		
NB-L	575'			F	155.6	1.25	236'	293'	NB-L	575'	F	110.3	1.08	-245'	m#335'		
NB-TT	±1000'			B	16.3	0.62	241'	295'	NB-TT	±1000'	C	22	0.63	170'	m217'		
NB-RR	275'			A	3.8	0.11	20'	26'	NB-RR	275'	A	0.1	0.11	0'	m0'		
SB-L	175'			D	45.8	0.21	11'	33'	SB-L	175'	D	45.5	0.2	11'	33'		
Lowell Road (route 3a) & Hampshire Drive/ Oblate Drive	ACTUATED-UNCOORDINATED	Overall		B	14.1	0.73			Overall		B	13.4	0.7				
		EB-LT	±500'	D	45	0.07	5'	23'	EB-LT	±500'	D	44.3	0.06	4'	24'		
		EB-R	100'	A	0.4	0.06	0'	0'	EB-R	100'	A	0.3	0.05	0'	0'		
		WB-LT	±380'	D	47	0.04	3'	16'	WB-LT	±380'	D	47	0.03	2'	14'		
		WB-R	100'	A	0.2	0.02	0'	0'	WB-R	100'	A	0.2	0.02	0'	0'		
		NB-L	225'	D	50.7	0.6	61'	201'	NB-L	225'	D	48.4	0.58	57'	#213'		
		NB-TTR	±1520'	A	5.2	0.32	0'	228'	NB-TTR	±1520'	A	5.2	0.33	0'	238'		
		SB-L	225'	D	49	0.02	1'	8'	SB-L	225'	D	48.5	0.02	1'	10'		
		SB-TTR	±1790'	B	15.9	0.73	172'	506'	SB-TTR	±1790'	B	15.2	0.7	153'	525'		
		Lowell Road (route 3a) & Executive Drive	ACTUATED-UNCOORDINATED	Overall		C	33.3	0.96			Overall		D	36.2	0.92		
EB-LT	±490'			E	61.9	0.54	32'	67'	EB-LT	±490'	D	47	0.39	30'	68'		
EB-R	225'			A	3.7	0.03	0'	5'	EB-R	225'	A	3.7	0.03	0'	9'		
WB-LT	±580'			F	83.6	0.91	140'	252'	WB-LT	±580'	E	70.2	0.85	146'	#269'		
WB-R	80'			B	15.8	0.35	16'	55'	WB-R	80'	B	13.7	0.33	15'	66'		
NB-L	350'			F	100.4	0.96	132'	296'	NB-L	350'	E	70.4	0.84	146'	#268'		
NB-TTR	±1790'			B	12	0.32	102'	135'	NB-TTR	±1790'	B	15.8	0.36	129'	182'		
SB-L	150'			E	72.7	0.74	76'	172'	SB-L	150'	E	60.2	0.67	92'	152'		
SB-TTR	±1170'			C	23.7	0.83	394'	488'	SB-TTR	±1170'	C	34.7	0.92	505'	#676'		
Lowell Road (route 3a) & Fox Hollow Drive/ Nottingham Square Driveway	ACTUATED-COORDINATED			Overall		D	45.5	0.96			Overall		D	47.9	0.98		
		EB-LT	±600'	F	100.2	0.3	17'	40'	EB-LT	±600'	F	100.2	0.3	17'	45'		
		EB-R	50'	B	12.4	0.42	0'	3'	EB-R	50'	B	13.6	0.43	0'	20'		
		WB-LT	±260'	F	90.2	0.16	9'	27'	WB-LT	±260'	F	90.1	0.16	9'	30'		
		WB-R	100'	A	0.5	0.06	0'	0'	WB-R	100'	A	0.5	0.06	0'	0'		
		NB-L	210'	F	89	0.08	5'	20'	NB-L	210'	F	89.8	0.1	6'	23'		
		NB-T	±1410'	A	5.9	0.25	73'	227'									
		NB-R	325'	A	0	0	0'	0'	NB-TTR	±1410'	A	6.4	0.26	76'	236'		
		SB-L	125'	F	95.9	0.28	20'	50'	SB-L	125'	F	97.4	0.32	24'	57'		
		SB-TR	±550'	E	63.5	0.96	695'	2516'	SB-TR	±550'	E	67.1	0.98	750'	#2569'		
Lowell Road (route 3a) & Pelham Road	ACTUATED-COORDINATED	Overall		E	65.5	1.55			Overall		E	65.3	1.54				
		WB-L	±510'	F	320.3	1.55	509'	695'	WB-L	±510'	F	318.3	1.54	-506'	#716'		
		WB-R	75'	E	63.3	0.56	73'	143'	WB-R	75'	E	62.7	0.56	72'	144'		
		NB-TR	±550'	C	20.7	0.52	300'	715'	NB-TR	±550'	C	21.7	0.53	313'	745'		
		SB-L	150'	F	238.7	1.17	109'	233'	SB-L	150'	F	243.1	1.19	-112'	#236'		

**HORIZON YEAR CAPACITY ANALYSIS COMPARISON (APPROVED VS AMENDED) – WEEKDAY P.M. PEAK-HOUR**

INTERSECTION	CONTROL TYPE	2032 BUILD WITH IMPROVEMENTS PM					LANE USE	STORAGE LENGTH (ft)	2034 BUILD WITH IMPROVEMENTS PM					
		LOS	DELAY (sec)	V/C RATIO	QUEUES (ft)				LOS	DELAY (sec)	V/C RATIO	QUEUES (ft)		
					50th%	95th%						50th%	95th%	
River Road (route 3a)/ Lowell Road (route 3a) & Dracut Road & Steele Road	ACTUATED-COORDINATED	<b>C</b>	<b>25.8</b>	<b>0.79</b>			<b>Overall</b>		<b>C</b>	<b>26</b>	<b>0.85</b>			
		E	61.5	0.4	38'	68'	EB-L	±590'	E	61.1	0.38	35'	72'	
		A	0.2	0.02	0'	0'	EB-RR	50'	A	0	0.01	0'	0'	
		D	55	0.01	1'	7'	NB-L	200'	D	55	0.01	1'	7'	
		C	51	0.79	284'	478'	NB-TTR	±760'	D	50.1	0.79	295'	#413'	
		C	25.7	0.77	134'	128'	SB-LL	775'	B	19.7	0.83	120'	248'	
		A	1.9	0.38	4'	8'	SB-TR	±1730'	A	3	0.4	65'	176'	
		D	54.6	0.05	4'	17'	NWB-LL	100'	D	52.2	0.03	4'	17'	
		B	16	0.79	183'	342'	NWB-R		C	25.2	0.85	263'	#406'	
Lowell Road (route 3a) & Site Driveway/ Rena Avenue	ACTUATED-COORDINATED	<b>B</b>	<b>16.5</b>	<b>0.74</b>			<b>Overall</b>		<b>B</b>	<b>15.5</b>	<b>0.78</b>			
		E	57.4	0.74	122'	158'	EB-LL		E	64.7	0.78	128'	#195'	
		A	0.5	0.12	0'	0'	EB-TR	±510'	A	0.5	0.13	0'	0'	
		A	0.4	0.07	0'	0'	WB-LTR	±560'	A	0.9	0.1	0'	0'	
		E	57.5	0.3	28'	63'	NB-L	300'	E	63.1	0.33	33'	m40'	
		B	16.7	0.65	407'	533'	NB-TTR	±1730'	B	14.9	0.64	232'	702'	
		E	67.2	0.23	23'	45'	SB-L	350'	E	67.3	0.24	25'	m45'	
		A	9.1	0.66	103'	123'	SB-TTTR	±980'	A	5.9	0.57	73'	93'	
Lowell Road (route 3a) & Sam's Club Driveway/ Walmart Driveway	ACTUATED-COORDINATED	<b>C</b>	<b>27.9</b>	<b>0.89</b>			<b>Overall</b>		<b>C</b>	<b>29</b>	<b>1.01</b>			
		E	73.3	0.89	161'	239'	EB-LL	175'	E	64.6	0.79	134'	#196'	
		D	45.4	0.06	10'	30'	EB-T	±400'	D	45.4	0.06	12'	34'	
		A	5.4	0.38	0'	23'	EB-R	175'	A	9	0.29	6'	59'	
		E	58.1	0.4	39'	65'	WB-LL	150'	E	59	0.44	43'	74'	
		D	54.2	0.16	17'	42'	WB-T	±450'	D	53.9	0.17	19'	49'	
		C	29.1	0.81	29'	125'	WB-R	200'	C	28.3	0.61	122'	224'	
		E	64.4	0.62	49'	86'	NB-LL	350'	E	65.5	0.66	48'	m#81'	
		C	21.8	0.73	199'	261'	NB-TTTR	±980'	C	22.6	0.74	164'	305'	
		E	65.6	0.84	130'	131'	SB-LL	350'	F	90.6	1.01	~173'	m#182'	
		B	16.8	0.57	345'	349'	SB-TTT	±1190'	B	14.6	0.58	233'	m259'	
		A	0.3	0.33	0'	0'	SB-R	400'	A	0.2	0.23	0'	m0'	
Lowell Road (route 3a) & Sagamore Bridge Road	ACTUATED-COORDINATED	<b>E</b>	<b>57.3</b>	<b>1.26</b>			<b>Overall</b>		<b>E</b>	<b>58.5</b>	<b>1.21</b>			
		F	154.9	1.26	850'	987'	EB-LL	±930'	F	133.3	1.21	~850'	#987'	
		C	20.6	0.98	0'	216'	EB-R		B	16.8	0.96	0'	#164'	
		E	63.7	1.04	451'	549'	NB-LLL	525'	F	90.8	1.11	~482'	#566'	
		A	7.7	0.42	130'	165'	NB-TT	±1190'	B	16.1	0.44	234'	285'	
		E	72.5	1.02	251'	358'	SB-TT	±1000'	E	76.3	1.01	~271'	m#380'	
		A	2	0.54	72'	46'	SB-RR	200'	A	2.9	0.56	93'	94'	
Lowell Road (route 3a) & Flagstone Drive/ Wason Road	ACTUATED-UNCOORDINATED	<b>C</b>	<b>35</b>	<b>0.9</b>			<b>Overall</b>		<b>D</b>	<b>36.8</b>	<b>0.9</b>			
		F	92.1	0.9	148'	232'	EB-LT	±810'	E	73.2	0.77	128'	#218'	
		D	48.1	0.9	373'	439'	EB-R	250'	D	39.4	0.82	313'	446'	
		E	73.5	0.87	221'	382'	WB-L	200'	E	78.6	0.9	228'	#404'	
		E	72.3	0.86	220'	378'	WB-LT	±590'	E	77.6	0.89	228'	#402'	
		A	0.3	0.07	0'	0'	WB-R	75'	A	0.3	0.07	0'	0'	
		E	57.8	0.4	111'	117'	NB-L	575'	E	58.6	0.45	132'	m140'	
		B	19.5	0.81	200'	161'	NB-TT	±1000'	C	31.9	0.84	293'	m258'	
		A	0.6	0.57	5'	1'	NB-RR	275'	A	2.8	0.58	37'	m39'	
		F	93.6	0.77	71'	155'	SB-L	175'	F	81.1	0.69	69'	#146'	
		D	45.4	0.79	300'	346'	SB-TTTR	±430'	D	44.7	0.78	302'	#381'	
Lowell Road (route 3a) & Hampshire Drive/ Oblate Drive	ACTUATED-UNCOORDINATED	<b>B</b>	<b>14.5</b>	<b>0.62</b>			<b>Overall</b>		<b>B</b>	<b>14.3</b>	<b>0.62</b>			
		D	49	0.38	12'	55'	EB-LT	±500'	D	47.5	0.34	10'	#57'	
		A	6.2	0.3	0'	29'	EB-R	100'	A	6.4	0.28	0'	40'	
		D	40.3	0.08	5'	27'	WB-LT	±380'	D	40.8	0.08	4'	29'	
		A	0.2	0.02	0'	0'	WB-R	100'	A	0.2	0.02	0'	0'	
		D	42.6	0.14	6'	36'	NB-L	225'	D	42.8	0.15	7'	39'	
		B	12.8	0.61	118'	381'	NB-TTR	±1520'	B	12.6	0.61	116'	387'	
		D	42.8	0.06	2'	18'	SB-L	225'	D	43.3	0.06	2'	19'	
B	15.4	0.62	145'	293'	SB-TTR	±1790'	B	15.2	0.62	144'	312'			
Lowell Road (route 3a) & Executive Drive	ACTUATED-UNCOORDINATED	<b>C</b>	<b>21.2</b>	<b>0.85</b>			<b>Overall</b>		<b>C</b>	<b>21.7</b>	<b>0.81</b>			
		D	51.9	0.85	129'	322'	EB-LT	±490'	D	50	0.81	121'	#356'	
		A	4.1	0.13	0'	24'	EB-R	225'	A	4.5	0.12	0'	31'	
		C	26.8	0.14	10'	36'	WB-LT	±580'	C	28.5	0.14	11'	41'	
		A	0.4	0.07	0'	0'	WB-R	80'	A	0.4	0.08	0'	0'	
		D	40.3	0.36	25'	71'	NB-L	350'	D	43.1	0.4	28'	79'	
		B	14.6	0.64	165'	318'	NB-TTR	±1790'	B	16.6	0.67	167'	324'	
		D	38.7	0.13	7'	31'	SB-L	150'	D	40.7	0.17	9'	36'	
C	20.1	0.64	170'	238'	SB-TTR	±1170'	B	19.7	0.64	181'	250'			
Lowell Road (route 3a) & Fox Hollow Drive/ Nottingham Square Driveway	ACTUATED-COORDINATED	<b>B</b>	<b>17.8</b>	<b>0.68</b>			<b>Overall</b>		<b>B</b>	<b>18.8</b>	<b>0.76</b>			
		F	90.1	0.22	16'	40'	EB-LT	±600'	F	89.5	0.21	15'	42'	
		A	2.8	0.2	0'	0'	EB-R	50'	A	2.9	0.2	0'	0'	
		F	117.7	0.59	46'	81'	WB-LT	±260'	F	119.1	0.61	47'	94'	
		B	16.3	0.25	0'	36'	WB-R	100'	B	16.1	0.25	0'	49'	
		F	103.9	0.42	32'	70'	NB-L	210'	F	105.6	0.46	37'	77'	
		B	10.3	0.5	252'	600'	NB-TTR	±1410'	B	10.5	0.51	260'	615'	
		A	0	0	0'	0'	SB-L	125'	F	126.5	0.76	82'	#164'	
F	119.5	0.68	71'	134'	SB-TR	±550'	B	15.4	0.57	304'	892'			
B	14.9	0.56	294'	870'										
Lowell Road (route 3a) & Pelham Road	ACTUATED-COORDINATED	<b>F</b>	<b>81.3</b>	<b>2.08</b>			<b>Overall</b>		<b>E</b>	<b>59.5</b>	<b>1.08</b>			
		F	115.2	0.76	135'	197'	WB-L	±510'	F	112.8	0.74	133'	202'	
		C	30.4	0.7	30'	118'	WB-R	75'	B	13.6	0.56	0'	78'	
		F	82	0.98	1286'	2494'	NB-TR	±550'	F	85.8	1.08	~1907'	#2807'	
		F	568.2	2.08	268'	423'	SB-L	150'	F	113.3	0.79	172'	248'	
		B	10.5	0.57	244'	851'	SB-T	±1310'	B	10.6	0.57	242'	883'	

OPENING YEAR CAPACITY ANALYSIS COMPARISON (TENANT VS ITE) – WEEKDAY A.M. PEAK-HOUR													
INTERSECTION	CONTROL TYPE	2024 WITH IMPROVEMENTS BUILD AM (TENANT)					2024 BUILD WITH IMPROVEMENTS AM (ITE)						
		LOS	DELAY (sec)	V/C RATIO	QUEUES (ft)		LANE USE	STORAGE LENGTH (ft)	LOS	DELAY (sec)	V/C RATIO	QUEUES (ft)	
					50th%	95th%						50th%	95th%
River Road (route 3a)/ Lowell Road (route 3a) & Dracut Road & Steele Road	ACTUATED-COORDINATED	B	17.1	0.86			Overall		B	17.4	0.86		
		D	40	0.02	1'	8'	EB-L	±590'	D	40	0.02	1'	8'
		A	0	0	0'	0'	EB-RR	50'	A	0	0	0'	0'
		O	0	0	0'	0'	NB-L	200'	O	0	0	0'	0'
		C	33.2	0.38	82'	138'	NB-TTR	±760'	C	29.8	0.31	73'	133'
		C	26.7	0.38	129'	95'	SB-LL	775'	C	27.8	0.44	134'	101'
		A	2.4	0.42	2'	6'	SB-TR	±1730'	A	3.4	0.42	3'	8'
		D	37	0.01	1'	5'	NWB-LL	100'	D	37	0.01	1'	5'
B	15.5	0.86	164'	#457'	NWB-R		B	16	0.86	168'	#314'		
Lowell Road (route 3a) & Site Driveway/ Rena Avenue	ACTUATED-COORDINATED	A	8.8	0.49			Overall		B	13.2	0.55		
		D	40.3	0.01	1'	5'	EB-LL		D	47.2	0.54	58'	#138'
		A	0	0	0'	0'	EB-TR	±510'	A	0.3	0.07	0'	0'
		B	19	0.26	1'	32'	WB-LTR	±560'	C	20.4	0.29	1'	32'
		D	41.5	0.46	55'	m68'	NB-L	300'	D	42.7	0.3	29'	m39'
		A	5.1	0.44	94'	265'	NB-TTR	±1730'	A	10.2	0.55	195'	264'
		C	32.4	0.05	4'	m8'	SB-L	350'	D	37.9	0.05	4'	m10'
		A	9.4	0.45	46'	137'	SB-TTTR	±980'	B	9.6	0.47	72'	73'
Lowell Road (route 3a) & Sam's Club Driveway/ Walmart Driveway	ACTUATED-COORDINATED	B	15	0.55			Overall		B	15	0.54		
		D	44.8	0.45	33'	60'	EB-LL	175'	D	47.4	0.54	41'	72'
		D	36	0.01	2'	12'	EB-T	±400'	D	36	0.01	2'	12'
		A	1.7	0.11	0'	9'	EB-R	175'	A	1.7	0.11	0'	9'
		D	38.8	0.07	5'	15'	WB-LL	150'	D	38.8	0.07	5'	15'
		D	38.2	0.04	3'	15'	WB-T	±450'	D	38.2	0.04	3'	15'
		A	4.2	0.2	0'	22'	WB-R	200'	A	4.2	0.2	0'	22'
		D	46.4	0.23	21'	45'	NB-LL	350'	D	44.4	0.23	23'	m41'
		B	12	0.47	157'	93'	NB-TTTR	±980'	B	12.8	0.54	151'	143'
		D	46.9	0.29	26'	m32'	SB-LL	350'	D	47.5	0.29	26'	m38'
		B	13.3	0.55	165'	323'	SB-TTT	±1190'	B	11.6	0.45	111'	251'
A	0.5	0.1	0'	m0'	SB-R	400'	A	0.5	0.1	0'	m0'		
Lowell Road (route 3a) & Sagamore Bridge Road	ACTUATED-COORDINATED	B	15.7	0.84			Overall		B	15.9	0.86		
		C	34.4	0.84	276'	355'	EB-LL	±930'	C	34.4	0.84	276'	355'
		A	4.6	0.82	0'	0'	EB-R		A	2.2	0.67	0'	0'
		C	25.2	0.76	161'	164'	NB-LLL	525'	C	26.2	0.86	215'	#250'
		A	4.2	0.21	18'	11'	NB-TT	±1190'	A	4.5	0.23	17'	14'
		D	35.1	0.83	134'	m#158'	SB-TT	±1000'	C	34.7	0.8	116'	m129'
		A	4.6	0.61	99'	m105'	SB-RR	200'	A	4.5	0.61	106'	m108'
Lowell Road (route 3a) & Flagstone Drive/ Wason Road	ACTUATED-UNCOORDINATED	D	50.4	1.01			Overall		D	47.6	1.01		
		F	89.1	0.83	58'	#148'	EB-LT	±810'	F	89.1	0.83	58'	#148'
		C	20.2	0.55	95'	179'	EB-R	250'	C	20.2	0.55	95'	179'
		E	77	0.97	210'	#390'	WB-L	200'	E	77	0.97	210'	#390'
		E	77.5	0.97	213'	#397'	WB-LT	±590'	E	77.5	0.97	213'	#397'
		A	0.2	0.06	0'	0'	WB-R	75'	A	0.2	0.06	0'	0'
		F	93.5	1.01	~213'	m#331'	NB-L	575'	F	93.3	1.01	~213'	m#333'
		B	19.6	0.55	129'	198'	NB-TT	±1000'	C	20.4	0.58	138'	210'
		A	0.1	0.1	0'	m0'	NB-RR	275'	A	0.1	0.1	0'	m0'
		D	45.2	0.19	10'	32'	SB-L	175'	D	45.2	0.19	10'	32'
E	58.4	1	268'	#373'	SB-TTTR	±430'	D	50.2	0.96	254'	#349'		
Lowell Road (route 3a) & Hampshire Drive/ Oblate Drive	ACTUATED-UNCOORDINATED	B	11.7	0.67			Overall		B	11.3	0.65		
		D	39.4	0.05	3'	22'	EB-LT	±500'	D	38.5	0.05	2'	22'
		A	0.2	0.04	0'	0'	EB-R	100'	A	0.2	0.04	0'	0'
		D	42.2	0.02	1'	14'	WB-LT	±380'	D	41.5	0.02	1'	14'
		A	0	0.02	0'	0'	WB-R	100'	A	0	0.02	0'	0'
		D	41.1	0.51	38'	#190'	NB-L	225'	D	40	0.51	36'	#190'
		A	4.2	0.28	0'	200'	NB-TTR	±1520'	A	4.3	0.29	0'	211'
		D	44	0.02	1'	10'	SB-L	225'	D	43	0.02	1'	10'
B	13.2	0.67	128'	476'	SB-TTR	±1790'	B	12.9	0.65	118'	448'		
Lowell Road (route 3a) & Executive Drive	ACTUATED-UNCOORDINATED	C	32.6	1.04			Overall		C	31.4	1.02		
		D	53.2	0.45	24'	65'	EB-LT	±490'	D	50.1	0.43	23'	64'
		A	4.7	0.04	0'	10'	EB-R	225'	A	4.7	0.04	0'	10'
		E	75	0.87	117'	#267'	WB-LT	±580'	E	71	0.86	112'	#267'
		B	13.6	0.34	9'	61'	WB-R	80'	B	13.4	0.33	8'	61'
		F	121.1	1.04	~135'	#305'	NB-L	350'	F	113.1	1.02	~127'	#305'
		B	11.8	0.3	87'	118'	NB-TTR	±1790'	B	12.3	0.32	95'	128'
		E	64.5	0.69	73'	#175'	SB-L	150'	E	62.2	0.68	70'	#175'
		C	21	0.79	346'	432'	SB-TTR	±1170'	C	20.7	0.78	325'	405'
Lowell Road (route 3a) & Fox Hollow Drive/ Nottingham Square Driveway	ACTUATED-COORDINATED	C	32.6	0.9			Overall		C	27.6	0.87		
		F	98.4	0.28	15'	42'	EB-LT	±600'	F	98.4	0.28	15'	42'
		B	10.4	0.39	0'	10'	EB-R	50'	B	10.4	0.39	0'	10'
		F	89.2	0.14	8'	27'	WB-LT	±260'	F	89.2	0.14	8'	27'
		A	0.5	0.06	0'	0'	WB-R	100'	A	0.5	0.06	0'	0'
		F	89	0.08	5'	20'	NB-L	210'	F	89	0.08	5'	20'
		A	8	0.41	149'	493'							
		A	0	0	0'	0'	NB-TTR	±1410'	A	5.6	0.23	67'	211'
F	96.5	0.3	21'	52'	SB-L	125'	F	96.5	0.3	21'	52'		
D	42.1	0.9	545'	#2349'	SB-TR	±550'	D	36.6	0.87	471'	#2229'		
Lowell Road (route 3a) & Pelham Road	ACTUATED-COORDINATED	D	54.7	1.39			Overall		D	54.4	1.39		
		F	261.9	1.39	~434'	#636'	WB-L	±510'	F	261.9	1.39	~434'	#636'
		E	57.8	0.51	62'	129'	WB-R	75'	E	57.8	0.51	62'	129'
		B	17.5	0.46	247'	593'	NB-TR	±550'	B	18.9	0.49	271'	648'
		F	214.6	1.08	~94'	#213'	SB-L	150'	F	214.6	1.08	~94'	#213'
B	19.6	0.82	633'	#1850'	SB-T	±1310'	B	18.1	0.79	564'	#1726'		

OPENING YEAR CAPACITY ANALYSIS COMPARISON (TENANT VS ITE) – WEEKDAY P.M. PEAK-HOUR													
INTERSECTION	CONTROL TYPE	2022 BUILD PM WITH IMPROVEMENTS (TENANT)					2024 BUILD WITH IMPROVEMENTS PM (ITE)						
		LOS	DELAY (sec)	V/C RATIO	QUEUES (ft)		LANE USE	STORAGE LENGTH (ft)	LOS	DELAY (sec)	V/C RATIO	QUEUES (ft)	
					50th%	95th%						50th%	95th%
River Road (route 3a)/ Lowell Road (route 3a) & Dracut Road & Steele Road	ACTUATED-COORDINATED	C	23.7	0.82			Overall		C	22.6	0.79		
		E	60.7	0.35	31'	67'	EB-L	±590'	E	60.7	0.35	31'	67'
		A	0	0.01	0'	0'	EB-RR	50'	A	0	0.01	0'	0'
		D	55	0.01	1'	7'	NB-L	200'	D	55	0.01	1'	7'
		D	44.6	0.68	250'	#362'	NB-TTR	±760'	D	45	0.68	249'	#354'
		B	18.9	0.78	109'	69'	SB-LL	775'	B	17.7	0.79	119'	71'
		A	2.6	0.36	51'	129'	SB-TR	±1730'	A	3.3	0.36	58'	162'
		D	52	0.02	3'	15'	NWB-LL	100'	D	52	0.02	3'	15'
		C	21.9	0.82	231'	287'	NWB-R		B	19.1	0.78	195'	368'
Lowell Road (route 3a) & Site Driveway/ Rena Avenue	ACTUATED-COORDINATED	A	9.6	0.55			Overall		B	15	0.73		
		D	54.9	0.25	22'	44'	EB-LL		E	60.5	0.77	120'	#190'
		A	0.2	0.05	0'	0'	EB-TR	±510'	A	0.5	0.12	0'	0'
		A	0.8	0.09	0'	0'	WB-LTR	±560'	A	0.8	0.09	0'	0'
		E	64.4	0.48	61'	m82'	NB-L	300'	E	65.2	0.33	34'	m45'
		B	10.8	0.52	187'	595'	NB-TTR	±1730'	B	13.6	0.58	200'	617'
		E	63.1	0.22	22'	m39'	SB-L	350'	E	67.9	0.22	22'	m44'
		A	4.5	0.55	62'	79'	SB-TTTR	±980'	A	6	0.62	79'	83'
		Lowell Road (route 3a) & Sam's Club Driveway/ Walmart Driveway	ACTUATED-COORDINATED	C	24.7	0.9			Overall		C	26.5	0.9
E	60.5			0.72	116'	165'	EB-LL	175'	E	61.4	0.74	121'	170'
D	45.4			0.06	11'	32'	EB-T	±400'	D	45.4	0.06	11'	32'
A	7.1			0.27	0'	47'	EB-R	175'	A	7.1	0.27	0'	47'
E	58.1			0.4	39'	69'	WB-LL	150'	E	58.1	0.4	39'	69'
D	53.5			0.15	17'	44'	WB-T	±450'	D	53.6	0.15	17'	44'
C	24.8			0.56	99'	190'	WB-R	200'	C	24.9	0.56	99'	190'
E	75.1			0.61	47'	#83'	NB-LL	350'	E	63.5	0.61	43'	m#72'
B	15.2			0.57	82'	152'	NB-TTTR	±980'	C	20.9	0.68	160'	259'
E	72.8			0.9	146'	m147'	SB-LL	350'	E	78.1	0.9	147'	m#176'
B	15.4			0.62	310'	m319'	SB-TTT	±1190'	B	13.6	0.53	179'	m249'
A	0.2			0.22	0'	m0'	SB-R	400'	A	0.2	0.21	0'	m0'
Lowell Road (route 3a) & Sagamore Bridge Road	ACTUATED-COORDINATED	D	40.3	1.06			Overall		D	40.1	1.09		
		E	78.5	1.06	678'	815'	EB-LL	±930'	F	88.9	1.09	~714'	#851'
		A	9.3	0.9	0'	5'	EB-R		A	7.8	0.88	0'	0'
		E	73.4	1.05	433'	523'	NB-LLL	525'	E	61.9	1.02	~410'	#495'
		B	15	0.4	221'	225'	NB-TT	±1190'	B	15.9	0.4	225'	245'
		E	63.8	0.94	245'	342'	SB-TT	±1000'	E	63.5	0.93	243'	m#344'
		A	1.8	0.49	58'	39'	SB-RR	200'	A	2.2	0.51	74'	62'
		Lowell Road (route 3a) & Flagstone Drive/ Wason Road	ACTUATED-UNCOORDINATED	C	33.6	0.83			Overall		C	33.7	0.82
E	72.1			0.75	121'	195'	EB-LT	±810'	E	72.1	0.75	121'	195'
D	37.8			0.79	282'	385'	EB-R	250'	D	37.9	0.79	282'	385'
E	69.7			0.83	203'	#352'	WB-L	200'	E	68.5	0.82	203'	#352'
E	69			0.82	203'	#351'	WB-LT	±590'	E	67.8	0.82	203'	#351'
A	0.2			0.06	0'	0'	WB-R	75'	A	0.2	0.06	0'	0'
E	59.7			0.46	124'	m139'	NB-L	575'	E	58.9	0.46	125'	m141'
C	28			0.69	238'	m235'	NB-TT	±1000'	C	29.3	0.72	253'	m250'
A	1.8			0.5	15'	m17'	NB-RR	275'	A	2.2	0.5	27'	m28'
E	76.1			0.64	62'	#129'	SB-L	175'	E	76.1	0.64	62'	#129'
D	40.3	0.69	273'	351'	SB-TTTR	±430'	D	39.9	0.66	260'	335'		
Lowell Road (route 3a) & Hampshire Drive/ Oblate Drive	ACTUATED-UNCOORDINATED	B	13.7	0.63			Overall		B	13.3	0.58		
		D	39.5	0.28	9'	47'	EB-LT	±500'	D	39.6	0.28	9'	48'
		A	5.7	0.25	0'	34'	EB-R	100'	A	5.8	0.24	0'	35'
		D	35.5	0.07	4'	25'	WB-LT	±380'	D	35.8	0.07	4'	26'
		A	0	0.01	0'	0'	WB-R	100'	A	0	0.01	0'	0'
		D	37.6	0.13	6'	33'	NB-L	225'	D	37.7	0.13	6'	34'
		B	11	0.54	90'	321'	NB-TTR	±1520'	B	11.3	0.58	95'	337'
		D	37.8	0.05	2'	16'	SB-L	225'	D	38	0.04	2'	17'
B	16	0.63	129'	292'	SB-TTR	±1790'	B	15	0.58	121'	275'		
Lowell Road (route 3a) & Executive Drive	ACTUATED-UNCOORDINATED	B	19.6	0.69			Overall		B	19.5	0.69		
		D	37.5	0.69	104'	#273'	EB-LT	±490'	D	37.1	0.69	99'	#284'
		A	3.8	0.1	0'	26'	EB-R	225'	A	3.9	0.1	0'	28'
		C	24.3	0.12	9'	34'	WB-LT	±580'	C	24.5	0.12	9'	35'
		A	0.3	0.07	0'	0'	WB-R	80'	A	0.3	0.07	0'	0'
		D	38.4	0.36	26'	68'	NB-L	350'	D	38.4	0.36	25'	69'
		B	14.1	0.58	138'	270'	NB-TTR	±1790'	B	14.5	0.61	146'	284'
		D	36.6	0.14	8'	30'	SB-L	150'	D	36.9	0.14	7'	31'
C	21.1	0.67	171'	243'	SB-TTR	±1170'	C	20.6	0.65	159'	227'		
Lowell Road (route 3a) & Fox Hollow Drive/ Nottingham Square Driveway	ACTUATED-COORDINATED	C	24.6	0.84			Overall		C	25.6	0.87		
		F	88.9	0.19	14'	39'	EB-LT	±600'	F	88.9	0.19	14'	39'
		A	2.6	0.18	0'	0'	EB-R	50'	A	2.6	0.18	0'	0'
		F	115.7	0.57	44'	89'	WB-LT	±260'	F	115.7	0.57	44'	89'
		B	16.9	0.23	0'	46'	WB-R	100'	B	16.9	0.23	0'	46'
		F	104.3	0.44	33'	71'	NB-L	210'	F	104.3	0.44	33'	71'
		C	22.5	0.84	749'	#1845'	NB-T	±1410'	C	24.6	0.87	830'	#1948'
		A	0	0.01	0'	0'	NB-R	325'	A	0	0.01	0'	0'
F	121.8	0.71	74'	#144'	SB-L	125'	F	121.8	0.71	74'	#144'		
B	14.3	0.54	275'	823'	SB-TR	±550'	B	13.3	0.51	251'	750'		
Lowell Road (route 3a) & Pelham Road	ACTUATED-COORDINATED	E	70.8	1.88			Overall		E	72.7	1.88		
		F	114.1	0.72	121'	188'	WB-L	±510'	F	114.1	0.72	121'	188'
		C	23.4	0.64	10'	99'	WB-R	75'	C	23.4	0.64	10'	99'
		E	73.4	0.87	846'	#2097'	NB-TR	±550'	E	75.1	0.9	937'	#2207'
		F	487.8	1.88	~235'	#390'	SB-L	150'	F	487.8	1.88	~235'	#390'
		A	9.7	0.54	213'	803'	SB-T	±1310'	A	9.1	0.51	193'	730'

## **Appendix K**

### **Sim Traffic Queueing & Blocking Reports**

**2024 No-Build Weekday A.M.**

Intersection: 1: River Road (Route 3A)/Lowell Road (Route 3A) & Dracut Road & Steele Road

Movement	EB	EB	NB	NB	SB	SB	SB	NW	NW
Directions Served	L	R>	T	TR	L	T	TR	<L	R
Maximum Queue (ft)	28	42	208	173	365	121	140	62	539
Average Queue (ft)	2	5	113	60	190	32	55	3	511
95th Queue (ft)	19	27	188	152	323	92	118	35	532
Link Distance (ft)	531		614			1671	1671		487
Upstream Blk Time (%)									100
Queuing Penalty (veh)									0
Storage Bay Dist (ft)		50		300	775			100	
Storage Blk Time (%)	0	3	0						90
Queuing Penalty (veh)	0	0	0						1

Intersection: 2: Lowell Road (Route 3A) & Site Driveway/Rena Avenue

Movement	EB	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	LTR	L	T	TR	L	T	TR
Maximum Queue (ft)	28	43	53	46	138	89	34	203	202
Average Queue (ft)	4	3	20	12	28	14	5	49	45
95th Queue (ft)	21	24	47	37	98	57	23	154	142
Link Distance (ft)	460		503		1671	1671		893	893
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)		50		300			350		
Storage Blk Time (%)	0	1							
Queuing Penalty (veh)	0	0							



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

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	L	T	R	L	L	T	R	L	L	T	T
Maximum Queue (ft)	102	78	24	84	36	39	32	116	47	72	396	368
Average Queue (ft)	50	24	2	34	6	9	4	50	10	36	231	146
95th Queue (ft)	90	63	13	73	26	32	21	99	34	65	370	301
Link Distance (ft)			336				381				893	893
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	175	175		175	150	150		200	350	350		
Storage Blk Time (%)											2	1
Queuing Penalty (veh)											1	0

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

Movement	NB	SB	SB	SB	SB	SB
Directions Served	R	L	L	T	T	R
Maximum Queue (ft)	126	51	77	471	483	386
Average Queue (ft)	12	14	39	93	95	22
95th Queue (ft)	62	41	69	283	285	208
Link Distance (ft)				1093	1093	1093
Upstream Blk Time (%)						0
Queuing Penalty (veh)						0
Storage Bay Dist (ft)	175	350	350			
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 4: Lowell Road (Route 3A) & Sagamore Bridge Road

Movement	EB	EB	EB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	L	R	L	L	T	T	T	T	R	R
Maximum Queue (ft)	921	911	916	365	371	149	112	409	904	919	250
Average Queue (ft)	781	768	649	239	214	63	38	109	413	728	115
95th Queue (ft)	1126	1141	1298	341	354	142	89	307	1004	1226	319
Link Distance (ft)	873	873	873				1093	1093	890	890	890
Upstream Blk Time (%)	51	53	44					0	1	6	
Queuing Penalty (veh)	0	0	0					1	4	39	
Storage Bay Dist (ft)				525	525						200
Storage Blk Time (%)											0
Queuing Penalty (veh)											0

Intersection: 5: Lowell Road (Route 3A) & Flagstone Drive/Wason Road

Movement	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	L	LT	R	L	T	T	R	L	T	T
Maximum Queue (ft)	468	272	250	567	115	750	912	932	179	180	854	964
Average Queue (ft)	161	198	200	539	27	742	857	582	22	23	378	519
95th Queue (ft)	418	301	333	553	105	785	1083	1161	100	94	866	964
Link Distance (ft)	740			522			890	890			1440	1440
Upstream Blk Time (%)	1			84			34	1				
Queuing Penalty (veh)	0			0			231	7				
Storage Bay Dist (ft)		250	200		75	575			275	175		
Storage Blk Time (%)	0	12	0	84	0	91	5	1		0	11	17
Queuing Penalty (veh)	0	11	1	289	1	371	15	2		0	2	64

Intersection: 5: Lowell Road (Route 3A) & Flagstone Drive/Wason Road

Movement	SB
Directions Served	TR
Maximum Queue (ft)	350
Average Queue (ft)	328
95th Queue (ft)	399
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	300
Storage Blk Time (%)	36
Queuing Penalty (veh)	129

Intersection: 6: Lowell Road (Route 3A) & Hampshire Drive/Oblate Drive

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	LT	R	L	T	TR	L	T	TR
Maximum Queue (ft)	30	37	30	33	132	142	150	16	204	270
Average Queue (ft)	6	7	3	4	57	25	28	2	55	91
95th Queue (ft)	23	24	18	20	108	89	100	11	145	213
Link Distance (ft)	434		326			1440	1440		1706	1706
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)		100		100	225			225		
Storage Blk Time (%)									0	
Queuing Penalty (veh)									0	

Intersection: 7: Lowell Road (Route 3A) & Executive Drive

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	LT	R	L	T	TR	L	T	TR
Maximum Queue (ft)	93	9	572	105	272	267	179	199	288	325
Average Queue (ft)	33	0	537	66	126	85	53	85	174	210
95th Queue (ft)	74	7	595	142	247	189	128	172	269	305
Link Distance (ft)	444		530			1706	1706		1099	1099
Upstream Blk Time (%)			89							
Queuing Penalty (veh)			0							
Storage Bay Dist (ft)		225		80	350			150		
Storage Blk Time (%)			83	16	1			1	9	
Queuing Penalty (veh)			87	30	1			3	10	

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

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB
Directions Served	LT	R	LT	R	L	T	R	L	TR
Maximum Queue (ft)	143	74	30	25	35	376	7	65	476
Average Queue (ft)	27	46	5	5	5	88	0	15	204
95th Queue (ft)	99	80	21	20	22	262	5	44	443
Link Distance (ft)	554		215			1339			473
Upstream Blk Time (%)									1
Queuing Penalty (veh)									13
Storage Bay Dist (ft)		50		100	210		325	125	
Storage Blk Time (%)	1	28				1			9
Queuing Penalty (veh)	0	3				0			2

Intersection: 9: Lowell Road (Route 3A) & Pelham Road

Movement	WB	WB	NB	SB	SB
Directions Served	L	R	TR	L	T
Maximum Queue (ft)	503	125	439	200	889
Average Queue (ft)	394	63	156	95	401
95th Queue (ft)	608	153	343	195	790
Link Distance (ft)	477		473		1258
Upstream Blk Time (%)	39		0		0
Queuing Penalty (veh)	0		2		2
Storage Bay Dist (ft)		75		150	
Storage Blk Time (%)	76	5		4	20
Queuing Penalty (veh)	57	13		42	13

Zone Summary

Zone wide Queuing Penalty: 1446

**2024 No-Build Weekday P.M.**

Intersection: 1: River Road (Route 3A)/Lowell Road (Route 3A) & Dracut Road & Steele Road

Movement	EB	EB	NB	NB	SB	SB	SB	NW	NW
Directions Served	L	R>	T	TR	L	T	TR	<L	R
Maximum Queue (ft)	90	43	459	364	850	1698	1704	62	502
Average Queue (ft)	33	6	270	223	850	1660	1497	7	493
95th Queue (ft)	73	28	417	349	852	1838	2201	50	550
Link Distance (ft)	531		614			1671	1671		487
Upstream Blk Time (%)			0			45	12		88
Queuing Penalty (veh)			0			289	74		0
Storage Bay Dist (ft)		50		300	775			100	
Storage Blk Time (%)	14	0	29	2	91	11			91
Queuing Penalty (veh)	1	0	90	5	182	99			4

Intersection: 2: Lowell Road (Route 3A) & Site Driveway/Rena Avenue

Movement	EB	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	LTR	L	T	TR	L	T	TR
Maximum Queue (ft)	127	74	60	138	1028	993	375	900	898
Average Queue (ft)	55	20	14	6	486	454	93	611	575
95th Queue (ft)	110	58	44	73	1188	1168	341	1110	1124
Link Distance (ft)	460		503		1671	1671		893	893
Upstream Blk Time (%)					0	0		10	5
Queuing Penalty (veh)					2	2		63	30
Storage Bay Dist (ft)		50		300			350		
Storage Blk Time (%)	23	3			43		0	67	
Queuing Penalty (veh)	4	2			1		0	16	

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

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	L	T	R	L	L	T	R	L	L	T	T
Maximum Queue (ft)	187	200	351	192	118	122	396	250	79	475	925	938
Average Queue (ft)	167	175	268	77	44	35	377	246	25	348	844	827
95th Queue (ft)	219	255	502	168	91	86	505	277	65	673	1053	1080
Link Distance (ft)			336				381				893	893
Upstream Blk Time (%)			56				81				22	16
Queuing Penalty (veh)			0				0				149	107
Storage Bay Dist (ft)	175	175		175	150	150		200	350	350		
Storage Blk Time (%)	53	61	0	5	0	0		88			75	46
Queuing Penalty (veh)	69	81	0	14	0	0		99			75	36

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

Movement	NB	SB	SB	SB	SB	SB
Directions Served	R	L	L	T	T	R
Maximum Queue (ft)	249	157	361	919	963	825
Average Queue (ft)	79	83	174	362	347	221
95th Queue (ft)	237	142	403	927	945	877
Link Distance (ft)				1093	1093	1093
Upstream Blk Time (%)				1	1	6
Queuing Penalty (veh)				5	7	34
Storage Bay Dist (ft)	175	350	350			
Storage Blk Time (%)				20		
Queuing Penalty (veh)				63		

Intersection: 4: Lowell Road (Route 3A) & Sagamore Bridge Road

Movement	EB	EB	EB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	L	R	L	L	T	T	T	T	R	R
Maximum Queue (ft)	895	911	911	575	625	1113	1105	286	742	902	208
Average Queue (ft)	830	890	890	568	618	1044	471	154	164	126	13
95th Queue (ft)	1022	901	900	622	678	1348	1193	272	387	602	105
Link Distance (ft)	873	873	873			1093	1093	890	890	890	
Upstream Blk Time (%)	11	57	52			6	1		0	0	
Queuing Penalty (veh)	0	0	0			50	6		0	3	
Storage Bay Dist (ft)				525	525						200
Storage Blk Time (%)				44	61	6					
Queuing Penalty (veh)				142	196	62					

Intersection: 5: Lowell Road (Route 3A) & Flagstone Drive/Wason Road

Movement	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	L	LT	R	L	T	T	R	L	T	T
Maximum Queue (ft)	730	275	250	512	115	201	390	472	398	249	524	588
Average Queue (ft)	317	231	143	299	24	99	225	247	202	69	150	241
95th Queue (ft)	696	332	302	504	96	179	363	405	393	166	365	496
Link Distance (ft)	740			522			890	890			1440	1440
Upstream Blk Time (%)	4			3								
Queuing Penalty (veh)	0			0								
Storage Bay Dist (ft)		250	200		75	575			275	175		
Storage Blk Time (%)	3	27	1	53				6	5	1	4	3
Queuing Penalty (veh)	13	40	3	132				63	25	3	3	9

Intersection: 5: Lowell Road (Route 3A) & Flagstone Drive/Wason Road

Movement	SB
Directions Served	TR
Maximum Queue (ft)	349
Average Queue (ft)	234
95th Queue (ft)	373
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	300
Storage Blk Time (%)	8
Queuing Penalty (veh)	25

Intersection: 6: Lowell Road (Route 3A) & Hampshire Drive/Oblate Drive

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	LT	R	L	T	TR	L	T	TR
Maximum Queue (ft)	57	103	45	24	128	312	330	27	255	297
Average Queue (ft)	16	36	9	3	18	87	103	3	60	82
95th Queue (ft)	42	77	32	18	81	236	257	17	163	209
Link Distance (ft)	434		326			1440	1440		1706	1706
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)		100		100	225			225		
Storage Blk Time (%)		0				1			0	
Queuing Penalty (veh)		0				0			0	

**Intersection: 7: Lowell Road (Route 3A) & Executive Drive**

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	LT	R	L	T	TR	L	T	TR
Maximum Queue (ft)	234	83	464	105	114	344	322	48	216	234
Average Queue (ft)	105	5	268	23	39	146	112	11	85	101
95th Queue (ft)	183	44	602	88	86	298	263	34	172	198
Link Distance (ft)	444		530			1706	1706		1099	1099
Upstream Blk Time (%)			25							
Queuing Penalty (veh)			0							
Storage Bay Dist (ft)		225		80	350			150		
Storage Blk Time (%)	0		71	2		0			1	
Queuing Penalty (veh)	0		16	0		0			0	

**Intersection: 8: Lowell Road (Route 3A) & Fox Hollow Drive/Nottingham Square Driveway**

Movement	EB	EB	WB	WB	NB	NB	NB	B201	B201	SB	SB
Directions Served	LT	R	LT	R	L	T	R	T		L	TR
Maximum Queue (ft)	84	69	176	118	224	1123	214	196	5	177	406
Average Queue (ft)	19	29	39	35	38	448	10	7	0	47	79
95th Queue (ft)	65	67	107	90	139	990	97	110	4	112	257
Link Distance (ft)	554		215			1339		1099	1099		473
Upstream Blk Time (%)			0			0					0
Queuing Penalty (veh)			0			1					1
Storage Bay Dist (ft)		50		100	210		325			125	
Storage Blk Time (%)	5	15	1	4		19				1	4
Queuing Penalty (veh)	1	2	0	1		8				10	2

**Intersection: 9: Lowell Road (Route 3A) & Pelham Road**

Movement	WB	WB	NB	SB	SB
Directions Served	L	R	TR	L	T
Maximum Queue (ft)	409	125	488	200	1272
Average Queue (ft)	187	97	321	193	1161
95th Queue (ft)	379	146	610	209	1627
Link Distance (ft)	477		473		1258
Upstream Blk Time (%)			6		39
Queuing Penalty (veh)			69		323
Storage Bay Dist (ft)		75		150	
Storage Blk Time (%)	33	41		90	3
Queuing Penalty (veh)	49	36		608	3

**Zone Summary**

Zone wide Queuing Penalty: 3508



**2034 No-Build Weekday A.M.**

Intersection: 1: River Road (Route 3A)/Lowell Road (Route 3A) & Dracut Road & Steele Road

Movement	EB	EB	NB	NB	SB	SB	SB	NW	NW
Directions Served	L	R>	T	TR	L	T	TR	<L	R
Maximum Queue (ft)	27	46	208	183	369	121	147	41	541
Average Queue (ft)	1	4	121	67	200	30	48	1	512
95th Queue (ft)	8	25	193	161	333	89	114	24	532
Link Distance (ft)	531		614			1671	1671		487
Upstream Blk Time (%)									100
Queuing Penalty (veh)									0
Storage Bay Dist (ft)		50		300	775			100	
Storage Blk Time (%)	0	2	1						90
Queuing Penalty (veh)	0	0	1						1

Intersection: 2: Lowell Road (Route 3A) & Site Driveway/Rena Avenue

Movement	EB	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	LTR	L	T	TR	L	T	TR
Maximum Queue (ft)	36	65	55	39	146	109	40	213	190
Average Queue (ft)	3	6	25	11	36	19	7	47	40
95th Queue (ft)	19	33	47	35	112	73	29	152	130
Link Distance (ft)	460		503		1671	1671		893	893
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)		50		300			350		
Storage Blk Time (%)	0	3							
Queuing Penalty (veh)	0	0							

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

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	L	T	R	L	L	T	R	L	L	T	T
Maximum Queue (ft)	105	70	24	102	33	42	42	155	37	77	381	337
Average Queue (ft)	49	25	2	37	6	10	8	57	8	36	235	139
95th Queue (ft)	91	57	12	81	24	34	28	108	31	68	353	274
Link Distance (ft)			336				381				893	893
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	175	175		175	150	150		200	350	350		
Storage Blk Time (%)								0			1	1
Queuing Penalty (veh)								0			1	0

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

Movement	NB	SB	SB	SB	SB	SB
Directions Served	R	L	L	T	T	R
Maximum Queue (ft)	125	47	82	216	488	48
Average Queue (ft)	15	10	38	92	98	10
95th Queue (ft)	75	33	71	190	291	34
Link Distance (ft)				1093	1093	1093
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	175	350	350			
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 4: Lowell Road (Route 3A) & Sagamore Bridge Road

Movement	EB	EB	EB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	L	R	L	L	T	T	T	T	R	R
Maximum Queue (ft)	925	920	918	428	430	246	169	855	932	929	250
Average Queue (ft)	851	848	800	273	253	80	49	149	583	805	136
95th Queue (ft)	1051	1071	1238	401	423	183	119	478	1143	1205	340
Link Distance (ft)	873	873	873				1093	1093	890	890	890
Upstream Blk Time (%)	62	66	52					0	1	8	
Queuing Penalty (veh)	0	0	0					0	10	61	
Storage Bay Dist (ft)				525	525						200
Storage Blk Time (%)				0	0						0
Queuing Penalty (veh)				0	0						0

Intersection: 5: Lowell Road (Route 3A) & Flagstone Drive/Wason Road

Movement	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	L	LT	R	L	T	T	R	L	T	T
Maximum Queue (ft)	653	275	250	567	115	750	922	937	186	169	1233	1271
Average Queue (ft)	263	232	203	539	30	738	852	607	24	22	671	776
95th Queue (ft)	564	333	343	552	110	808	1103	1157	102	82	1283	1331
Link Distance (ft)	740			522			890	890			1440	1440
Upstream Blk Time (%)	0			88			36	1			0	0
Queuing Penalty (veh)	0			0			269	9			0	2
Storage Bay Dist (ft)		250	200		75	575			275	175		
Storage Blk Time (%)	1	30	1	89	0	90	7	3			19	33
Queuing Penalty (veh)	2	29	2	337	0	404	25	7			3	134

Intersection: 5: Lowell Road (Route 3A) & Flagstone Drive/Wason Road

Movement	SB
Directions Served	TR
Maximum Queue (ft)	350
Average Queue (ft)	342
95th Queue (ft)	386
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	300
Storage Blk Time (%)	60
Queuing Penalty (veh)	236

Intersection: 6: Lowell Road (Route 3A) & Hampshire Drive/Oblate Drive

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	LT	R	L	T	TR	L	T	TR
Maximum Queue (ft)	37	37	29	30	174	144	156	24	236	284
Average Queue (ft)	6	6	4	5	66	23	30	2	67	107
95th Queue (ft)	24	24	18	23	132	86	101	13	174	234
Link Distance (ft)	434		326			1440	1440		1706	1706
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)		100		100	225			225		
Storage Blk Time (%)					0				0	
Queuing Penalty (veh)					0				0	

Intersection: 7: Lowell Road (Route 3A) & Executive Drive

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	LT	R	L	T	TR	L	T	TR
Maximum Queue (ft)	110	12	566	105	238	235	210	189	311	330
Average Queue (ft)	39	1	543	56	121	87	63	90	183	208
95th Queue (ft)	85	12	561	133	223	185	154	174	297	316
Link Distance (ft)	444		530			1706	1706		1099	1099
Upstream Blk Time (%)			95							
Queuing Penalty (veh)			0							
Storage Bay Dist (ft)		225		80	350			150		
Storage Blk Time (%)			87	12				2	9	
Queuing Penalty (veh)			102	25				10	12	

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

Movement	EB	EB	WB	WB	NB	NB	B201	SB	SB
Directions Served	LT	R	LT	R	L	T	T	L	TR
Maximum Queue (ft)	164	75	36	21	29	272	6	140	484
Average Queue (ft)	35	47	6	7	5	66	0	20	217
95th Queue (ft)	116	81	24	20	23	187	5	81	459
Link Distance (ft)	554		215			1339	1099		473
Upstream Blk Time (%)									2
Queuing Penalty (veh)									25
Storage Bay Dist (ft)		50		100	210			125	
Storage Blk Time (%)	1	31				1			10
Queuing Penalty (veh)	1	4				0			2

Intersection: 9: Lowell Road (Route 3A) & Pelham Road

Movement	WB	WB	NB	SB	SB
Directions Served	L	R	TR	L	T
Maximum Queue (ft)	518	125	406	199	1145
Average Queue (ft)	492	64	144	105	567
95th Queue (ft)	507	157	338	204	1147
Link Distance (ft)	477		473		1258
Upstream Blk Time (%)	88		0		1
Queuing Penalty (veh)	0		1		9
Storage Bay Dist (ft)		75		150	
Storage Blk Time (%)	85	4		8	23
Queuing Penalty (veh)	70	10		93	16

Zone Summary

Zone wide Queuing Penalty: 1913

**2034 No-Build Weekday P.M.**

Intersection: 1: River Road (Route 3A)/Lowell Road (Route 3A) & Dracut Road & Steele Road

Movement	EB	EB	NB	NB	SB	SB	SB	NW	NW
Directions Served	L	R>	T	TR	L	T	TR	<L	R
Maximum Queue (ft)	90	43	629	400	850	1704	1704	125	502
Average Queue (ft)	33	4	444	329	850	1679	1536	18	502
95th Queue (ft)	73	25	697	478	852	1733	2069	86	502
Link Distance (ft)	531		614			1671	1671		487
Upstream Blk Time (%)			10			48	11		100
Queuing Penalty (veh)			0			337	78		0
Storage Bay Dist (ft)		50		300	775			100	
Storage Blk Time (%)	14	0	62	25	92	10			92
Queuing Penalty (veh)	1	0	205	81	202	100			5

Intersection: 2: Lowell Road (Route 3A) & Site Driveway/Rena Avenue

Movement	EB	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	LTR	L	T	TR	L	T	TR
Maximum Queue (ft)	136	74	52	250	1650	1646	375	919	937
Average Queue (ft)	53	24	13	14	1082	1057	126	751	729
95th Queue (ft)	111	64	40	129	1828	1829	405	1223	1243
Link Distance (ft)	460		503		1671	1671		893	893
Upstream Blk Time (%)					0	0		23	14
Queuing Penalty (veh)					1	1		165	97
Storage Bay Dist (ft)		50		300			350		
Storage Blk Time (%)	20	9			85		0	80	
Queuing Penalty (veh)	4	5			2		0	22	

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

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	L	T	R	L	L	T	R	L	L	T	T
Maximum Queue (ft)	187	200	351	192	110	178	396	250	92	475	917	942
Average Queue (ft)	168	178	311	104	49	38	396	250	23	365	903	896
95th Queue (ft)	222	256	486	218	101	102	396	251	65	677	917	939
Link Distance (ft)			336				381				893	893
Upstream Blk Time (%)			69				90				31	19
Queuing Penalty (veh)			0				0				230	142
Storage Bay Dist (ft)	175	175		175	150	150		200	350	350		
Storage Blk Time (%)	49	57	0	23	0	0		92			76	44
Queuing Penalty (veh)	71	84	0	70	1	0		115			84	39

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

Movement	NB	SB	SB	SB	SB	SB
Directions Served	R	L	L	T	T	R
Maximum Queue (ft)	250	152	450	1096	1101	985
Average Queue (ft)	71	77	299	706	691	606
95th Queue (ft)	212	137	584	1386	1396	1533
Link Distance (ft)				1093	1093	1093
Upstream Blk Time (%)				7	7	24
Queuing Penalty (veh)				41	42	146
Storage Bay Dist (ft)	175	350	350			
Storage Blk Time (%)				57		
Queuing Penalty (veh)				207		

Intersection: 4: Lowell Road (Route 3A) & Sagamore Bridge Road

Movement	EB	EB	EB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	L	R	L	L	T	T	T	T	R	R
Maximum Queue (ft)	891	911	920	575	625	1110	1118	417	752	918	250
Average Queue (ft)	741	889	890	562	608	967	427	205	224	229	39
95th Queue (ft)	1128	900	901	635	702	1481	1144	444	531	801	187
Link Distance (ft)	873	873	873			1093	1093	890	890	890	
Upstream Blk Time (%)	8	63	61			5	0		0	1	
Queuing Penalty (veh)	0	0	0			50	5		0	5	
Storage Bay Dist (ft)				525	525						200
Storage Blk Time (%)				38	55	7					0
Queuing Penalty (veh)				134	194	85					2



Intersection: 5: Lowell Road (Route 3A) & Flagstone Drive/Wason Road

Movement	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	L	LT	R	L	T	T	R	L	T	T
Maximum Queue (ft)	772	275	250	538	115	196	415	459	399	237	548	593
Average Queue (ft)	606	268	175	397	26	91	242	260	206	78	166	237
95th Queue (ft)	953	311	319	594	100	168	391	416	421	178	402	490
Link Distance (ft)	740			522			890	890			1440	1440
Upstream Blk Time (%)	34			10								
Queuing Penalty (veh)	0			0								
Storage Bay Dist (ft)		250	200		75	575			275	175		
Storage Blk Time (%)	6	55	1	62				8	5	0	5	2
Queuing Penalty (veh)	27	85	2	170				93	31	2	4	6

Intersection: 5: Lowell Road (Route 3A) & Flagstone Drive/Wason Road

Movement	SB
Directions Served	TR
Maximum Queue (ft)	349
Average Queue (ft)	238
95th Queue (ft)	370
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	300
Storage Blk Time (%)	8
Queuing Penalty (veh)	25

Intersection: 6: Lowell Road (Route 3A) & Hampshire Drive/Oblate Drive

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	LT	R	L	T	TR	L	T	TR
Maximum Queue (ft)	62	105	51	43	54	310	329	27	311	309
Average Queue (ft)	18	38	10	7	12	73	86	4	66	89
95th Queue (ft)	47	79	35	29	39	198	218	18	188	222
Link Distance (ft)	434		326			1440	1440		1706	1706
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)		100		100	225			225		
Storage Blk Time (%)	0	1				1			0	
Queuing Penalty (veh)	0	0				0			0	

**Intersection: 7: Lowell Road (Route 3A) & Executive Drive**

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	LT	R	L	T	TR	L	T	TR
Maximum Queue (ft)	239	79	501	103	102	374	339	68	223	241
Average Queue (ft)	118	6	358	17	42	136	102	11	87	101
95th Queue (ft)	206	54	598	77	87	303	255	39	180	208
Link Distance (ft)	444		530			1706	1706		1099	1099
Upstream Blk Time (%)			26							
Queuing Penalty (veh)			0							
Storage Bay Dist (ft)		225		80	350			150		
Storage Blk Time (%)	0		91	2		0			2	
Queuing Penalty (veh)	0		24	1		0			0	

**Intersection: 8: Lowell Road (Route 3A) & Fox Hollow Drive/Nottingham Square Driveway**

Movement	EB	EB	WB	WB	NB	NB	NB	B201	B201	SB	SB
Directions Served	LT	R	LT	R	L	T	R	T		L	TR
Maximum Queue (ft)	127	71	166	123	232	1052	400	703	260	175	454
Average Queue (ft)	22	34	41	43	46	420	23	53	6	48	95
95th Queue (ft)	76	71	116	102	150	898	171	354	98	113	309
Link Distance (ft)	554		215			1339		1099	1099		473
Upstream Blk Time (%)			1			0					0
Queuing Penalty (veh)			0			0					4
Storage Bay Dist (ft)		50		100	210		325			125	
Storage Blk Time (%)	6	21	1	6		19				2	4
Queuing Penalty (veh)	2	3	0	2		9				13	3

**Intersection: 9: Lowell Road (Route 3A) & Pelham Road**

Movement	WB	WB	NB	SB	SB
Directions Served	L	R	TR	L	T
Maximum Queue (ft)	489	125	489	200	1275
Average Queue (ft)	313	111	357	194	1258
95th Queue (ft)	547	153	618	206	1309
Link Distance (ft)	477		473		1258
Upstream Blk Time (%)	13		7		49
Queuing Penalty (veh)	0		92		426
Storage Bay Dist (ft)		75		150	
Storage Blk Time (%)	52	54		91	3
Queuing Penalty (veh)	83	53		679	3

**Zone Summary**

Zone wide Queuing Penalty: 4892

**2024 Build Weekday A.M.**

Intersection: 1: River Road (Route 3A)/Lowell Road (Route 3A) & Dracut Road & Steele Road

Movement	EB	EB	NB	NB	SB	SB	SB	NW	NW
Directions Served	L	R>	T	TR	L	T	TR	<L	R
Maximum Queue (ft)	18	52	230	190	262	70	88	82	542
Average Queue (ft)	1	4	121	66	139	12	25	2	511
95th Queue (ft)	7	25	207	170	231	49	70	30	532
Link Distance (ft)	531		614			1671	1671		487
Upstream Blk Time (%)									100
Queuing Penalty (veh)									0
Storage Bay Dist (ft)		50		300	775			100	
Storage Blk Time (%)		2	2	0					90
Queuing Penalty (veh)		0	3	0					1

Intersection: 2: Lowell Road (Route 3A) & Site Driveway/Rena Avenue

Movement	EB	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	LTR	L	T	TR	L	T	TR
Maximum Queue (ft)	278	75	84	324	1192	1168	38	355	391
Average Queue (ft)	135	35	24	111	516	475	6	160	166
95th Queue (ft)	240	86	57	356	1366	1332	24	317	327
Link Distance (ft)	460		503		1671	1671		893	893
Upstream Blk Time (%)					1	1			
Queuing Penalty (veh)					3	5			
Storage Bay Dist (ft)		50		300			350		
Storage Blk Time (%)	52	6			42			0	
Queuing Penalty (veh)	17	10			19			0	

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

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	L	T	R	L	L	T	R	L	L	T	T
Maximum Queue (ft)	178	185	294	98	32	46	63	165	49	475	936	930
Average Queue (ft)	121	106	119	29	4	12	6	62	8	237	718	657
95th Queue (ft)	210	234	387	69	20	38	50	129	32	605	1155	1133
Link Distance (ft)			336				381				893	893
Upstream Blk Time (%)			23								22	5
Queuing Penalty (veh)			0								152	34
Storage Bay Dist (ft)	175	175		175	150	150		200	350	350		
Storage Blk Time (%)	25	28	0	0				1			61	10
Queuing Penalty (veh)	15	17	1	0				0			39	3

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

Movement	NB	SB	SB	SB	SB	SB
Directions Served	R	L	L	T	T	R
Maximum Queue (ft)	249	79	99	353	504	111
Average Queue (ft)	27	15	42	117	135	24
95th Queue (ft)	131	48	79	271	357	75
Link Distance (ft)				1093	1093	1093
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	175	350	350			
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 4: Lowell Road (Route 3A) & Sagamore Bridge Road

Movement	EB	EB	EB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	L	R	L	L	T	T	T	T	R	R
Maximum Queue (ft)	918	926	925	575	625	1120	1128	708	918	930	250
Average Queue (ft)	793	781	671	567	609	954	543	135	478	795	137
95th Queue (ft)	1102	1130	1303	608	679	1432	1338	417	1056	1187	341
Link Distance (ft)	873	873	873			1093	1093	890	890	890	
Upstream Blk Time (%)	48	51	44			8	2	0	1	6	
Queuing Penalty (veh)	0	0	0			59	13	1	6	44	
Storage Bay Dist (ft)				525	525						200
Storage Blk Time (%)				36	59	12					0
Queuing Penalty (veh)				70	114	132					0

Intersection: 5: Lowell Road (Route 3A) & Flagstone Drive/Wason Road

Movement	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	L	LT	R	L	T	T	R	L	T	T
Maximum Queue (ft)	513	275	250	568	115	750	920	917	289	118	836	907
Average Queue (ft)	175	210	197	539	26	743	857	587	34	17	403	546
95th Queue (ft)	427	310	337	551	103	778	1064	1136	164	67	823	923
Link Distance (ft)	740			522			890	890			1440	1440
Upstream Blk Time (%)	0			85			32	1				
Queuing Penalty (veh)	0			0			222	6				
Storage Bay Dist (ft)		250	200		75	575			275	175		
Storage Blk Time (%)	1	12	1	87	0	92	6	5			13	23
Queuing Penalty (veh)	3	11	4	297	0	388	18	9			2	85

Intersection: 5: Lowell Road (Route 3A) & Flagstone Drive/Wason Road

Movement	SB
Directions Served	TR
Maximum Queue (ft)	350
Average Queue (ft)	333
95th Queue (ft)	392
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	300
Storage Blk Time (%)	43
Queuing Penalty (veh)	160

Intersection: 6: Lowell Road (Route 3A) & Hampshire Drive/Oblate Drive

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	LT	R	L	T	TR	L	T	TR
Maximum Queue (ft)	29	39	27	30	159	134	133	20	218	258
Average Queue (ft)	5	5	4	5	62	22	24	1	61	99
95th Queue (ft)	21	23	18	22	128	84	91	10	162	220
Link Distance (ft)	434		326			1440	1440		1706	1706
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)		100		100	225			225		
Storage Blk Time (%)					0				0	
Queuing Penalty (veh)					0				0	

Intersection: 7: Lowell Road (Route 3A) & Executive Drive

Movement	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	LT	R	L	T	TR	L	T	TR
Maximum Queue (ft)	95	565	105	245	259	239	196	331	341
Average Queue (ft)	35	543	63	124	84	56	96	171	205
95th Queue (ft)	81	559	139	223	186	150	182	291	316
Link Distance (ft)	444	530			1706	1706		1099	1099
Upstream Blk Time (%)		91							
Queuing Penalty (veh)		0							
Storage Bay Dist (ft)			80	350			150		
Storage Blk Time (%)		85	14				1	7	
Queuing Penalty (veh)		90	25				8	8	

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

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB
Directions Served	LT	R	LT	R	L	T	R	L	TR
Maximum Queue (ft)	126	74	26	18	28	338	4	85	483
Average Queue (ft)	22	41	4	5	4	84	0	19	206
95th Queue (ft)	79	78	18	19	18	232	3	59	456
Link Distance (ft)	554		215			1339			473
Upstream Blk Time (%)									1
Queuing Penalty (veh)									14
Storage Bay Dist (ft)		50		100	210		325	125	
Storage Blk Time (%)	2	23				2			9
Queuing Penalty (veh)	1	3				0			2

Intersection: 9: Lowell Road (Route 3A) & Pelham Road

Movement	WB	WB	NB	SB	SB
Directions Served	L	R	TR	L	T
Maximum Queue (ft)	507	125	438	199	884
Average Queue (ft)	399	69	138	94	405
95th Queue (ft)	606	160	317	180	784
Link Distance (ft)	477		473		1258
Upstream Blk Time (%)	32		0		
Queuing Penalty (veh)	0		2		
Storage Bay Dist (ft)		75		150	
Storage Blk Time (%)	79	6		3	21
Queuing Penalty (veh)	59	13		30	14

Zone Summary

Zone wide Queuing Penalty: 2234

**2024 Build Weekday P.M.**



Intersection: 1: River Road (Route 3A)/Lowell Road (Route 3A) & Dracut Road & Steele Road

Movement	EB	EB	NB	NB	NB	SB	SB	SB	NW	NW
Directions Served	L	R>	L	T	TR	L	T	TR	<L	R
Maximum Queue (ft)	100	51	50	629	400	850	1696	1703	88	502
Average Queue (ft)	35	6	4	591	384	849	1653	1548	10	502
95th Queue (ft)	81	29	57	758	465	853	1929	2124	63	504
Link Distance (ft)	531			614			1671	1671		487
Upstream Blk Time (%)				75			44	17		100
Queuing Penalty (veh)				0			291	112		0
Storage Bay Dist (ft)		50	200		300	775			100	
Storage Blk Time (%)	18	1		90	81	91	10			97
Queuing Penalty (veh)	1	0		275	246	187	91			4

Intersection: 2: Lowell Road (Route 3A) & Site Driveway/Rena Avenue

Movement	EB	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	LTR	L	T	TR	L	T	TR
Maximum Queue (ft)	475	75	46	375	1699	1697	375	913	925
Average Queue (ft)	350	50	15	196	1657	1658	96	724	714
95th Queue (ft)	540	94	38	501	1728	1734	353	1148	1163
Link Distance (ft)	460		503		1671	1671		893	893
Upstream Blk Time (%)	25				12	12		8	8
Queuing Penalty (veh)	0				77	81		60	63
Storage Bay Dist (ft)		50		300			350		
Storage Blk Time (%)	60	38			98		0	72	
Queuing Penalty (veh)	33	109			39		0	17	

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

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	L	T	R	L	L	T	R	L	L	T	T
Maximum Queue (ft)	187	200	385	185	86	93	396	250	69	475	929	922
Average Queue (ft)	176	191	329	77	34	34	396	250	19	354	905	889
95th Queue (ft)	210	227	473	169	75	74	396	251	55	679	917	988
Link Distance (ft)			336				381				893	893
Upstream Blk Time (%)			75				90				34	18
Queuing Penalty (veh)			0				0				271	144
Storage Bay Dist (ft)	175	175		175	150	150		200	350	350		
Storage Blk Time (%)	61	72	2	5				93			78	40
Queuing Penalty (veh)	81	96	8	15				105			78	32

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

Movement	NB	SB	SB	SB	SB	SB
Directions Served	R	L	L	T	T	R
Maximum Queue (ft)	250	173	450	1080	1097	1196
Average Queue (ft)	61	86	283	656	664	548
95th Queue (ft)	196	152	566	1324	1337	1454
Link Distance (ft)				1093	1093	1093
Upstream Blk Time (%)				3	3	16
Queuing Penalty (veh)				19	20	105
Storage Bay Dist (ft)	175	350	350			
Storage Blk Time (%)				48		
Queuing Penalty (veh)				154		

Intersection: 4: Lowell Road (Route 3A) & Sagamore Bridge Road

Movement	EB	EB	EB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	L	R	L	L	T	T	T	T	R	R
Maximum Queue (ft)	889	920	918	575	625	1113	1113	320	653	909	208
Average Queue (ft)	728	891	892	570	620	1039	378	165	183	146	25
95th Queue (ft)	1098	906	908	613	662	1356	1086	266	414	665	147
Link Distance (ft)	873	873	873			1093	1093	890	890	890	
Upstream Blk Time (%)	5	57	58			7	1		0	1	
Queuing Penalty (veh)	0	0	0			63	8		0	4	
Storage Bay Dist (ft)				525	525						200
Storage Blk Time (%)				37	60	5					0
Queuing Penalty (veh)				128	205	62					0

Intersection: 5: Lowell Road (Route 3A) & Flagstone Drive/Wason Road

Movement	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	L	LT	R	L	T	T	R	L	T	T
Maximum Queue (ft)	724	275	250	538	115	205	406	469	400	207	543	628
Average Queue (ft)	365	235	148	325	26	99	228	250	179	66	155	252
95th Queue (ft)	792	329	306	535	100	176	381	412	380	151	373	502
Link Distance (ft)	740			522			890	890			1440	1440
Upstream Blk Time (%)	11			6								
Queuing Penalty (veh)	0			0								
Storage Bay Dist (ft)		250	200		75	575			275	175		
Storage Blk Time (%)	6	30	2	55				7	3	0	4	3
Queuing Penalty (veh)	26	44	5	137				70	18	1	3	10

Intersection: 5: Lowell Road (Route 3A) & Flagstone Drive/Wason Road

Movement	SB
Directions Served	TR
Maximum Queue (ft)	350
Average Queue (ft)	250
95th Queue (ft)	390
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	300
Storage Blk Time (%)	7
Queuing Penalty (veh)	23

Intersection: 6: Lowell Road (Route 3A) & Hampshire Drive/Oblate Drive

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	LT	R	L	T	TR	L	T	TR
Maximum Queue (ft)	87	107	44	30	49	311	340	27	245	296
Average Queue (ft)	17	39	11	4	11	92	104	3	58	82
95th Queue (ft)	55	81	34	21	36	240	266	16	156	197
Link Distance (ft)	434		326			1440	1440		1706	1706
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)		100		100	225			225		
Storage Blk Time (%)	0	1				1			0	
Queuing Penalty (veh)	0	0				0			0	

Intersection: 7: Lowell Road (Route 3A) & Executive Drive

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	LT	R	L	T	TR	L	T	TR
Maximum Queue (ft)	215	63	396	105	94	334	287	44	280	290
Average Queue (ft)	105	5	172	23	37	158	120	11	92	107
95th Queue (ft)	183	45	411	83	79	314	265	36	196	215
Link Distance (ft)	444		530			1706	1706		1099	1099
Upstream Blk Time (%)			2							
Queuing Penalty (veh)			0							
Storage Bay Dist (ft)		225		80	350			150		
Storage Blk Time (%)	0	0	58	1		0			1	
Queuing Penalty (veh)	0	0	13	0		0			0	

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

Movement	EB	EB	WB	WB	NB	NB	NB	B201	B201	SB	SB
Directions Served	LT	R	LT	R	L	T	R	T		L	TR
Maximum Queue (ft)	104	72	103	88	257	1003	213	435	115	167	458
Average Queue (ft)	22	31	28	30	41	474	12	49	8	56	112
95th Queue (ft)	76	70	72	71	141	1080	112	317	102	140	354
Link Distance (ft)	554		215			1339		1099	1099		473
Upstream Blk Time (%)						2					1
Queuing Penalty (veh)						32					6
Storage Bay Dist (ft)		50		100	210		325			125	
Storage Blk Time (%)	5	17	0	1		20				3	5
Queuing Penalty (veh)	1	2	0	0		9				23	3

Intersection: 9: Lowell Road (Route 3A) & Pelham Road

Movement	WB	WB	NB	SB	SB
Directions Served	L	R	TR	L	T
Maximum Queue (ft)	424	125	489	200	1273
Average Queue (ft)	187	101	320	194	1258
95th Queue (ft)	362	147	606	206	1293
Link Distance (ft)	477		473		1258
Upstream Blk Time (%)	1		5		43
Queuing Penalty (veh)	0		70		367
Storage Bay Dist (ft)		75		150	
Storage Blk Time (%)	30	44		89	3
Queuing Penalty (veh)	44	38		635	3

Zone Summary

Zone wide Queuing Penalty: 4872

**2034 Build Weekday A.M.**

Intersection: 1: River Road (Route 3A)/Lowell Road (Route 3A) & Dracut Road & Steele Road

Movement	EB	EB	NB	NB	SB	SB	SB	NW	NW
Directions Served	L	R>	T	TR	L	T	TR	<L	R
Maximum Queue (ft)	16	48	321	276	301	33	60	21	541
Average Queue (ft)	1	3	153	104	149	3	16	1	511
95th Queue (ft)	8	24	275	234	251	19	47	17	531
Link Distance (ft)	531		614			1671	1671		487
Upstream Blk Time (%)									100
Queuing Penalty (veh)									0
Storage Bay Dist (ft)		50		300	775			100	
Storage Blk Time (%)		2	5	1					91
Queuing Penalty (veh)		0	7	1					1

Intersection: 2: Lowell Road (Route 3A) & Site Driveway/Rena Avenue

Movement	EB	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	LTR	L	T	TR	L	T	TR
Maximum Queue (ft)	273	74	74	375	1684	1680	41	350	345
Average Queue (ft)	136	32	28	175	1060	1025	6	144	149
95th Queue (ft)	239	81	62	468	1904	1906	26	288	290
Link Distance (ft)	460		503		1671	1671		893	893
Upstream Blk Time (%)					2	2			
Queuing Penalty (veh)					11	14			
Storage Bay Dist (ft)		50		300			350		
Storage Blk Time (%)	54	3			83			0	
Queuing Penalty (veh)	18	6			40			0	

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

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	L	T	R	L	L	T	R	L	L	T	T
Maximum Queue (ft)	187	200	388	135	32	49	78	168	45	475	943	947
Average Queue (ft)	150	145	212	38	3	12	11	70	7	279	900	878
95th Queue (ft)	225	259	492	103	18	37	60	140	31	650	981	1009
Link Distance (ft)			336				381				893	893
Upstream Blk Time (%)			39								40	14
Queuing Penalty (veh)			0								298	102
Storage Bay Dist (ft)	175	175		175	150	150		200	350	350		
Storage Blk Time (%)	39	42	0	0				0			80	14
Queuing Penalty (veh)	27	29	0	0				0			56	4

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

Movement	NB	SB	SB	SB	SB	SB
Directions Served	R	L	L	T	T	R
Maximum Queue (ft)	250	55	88	518	390	90
Average Queue (ft)	44	14	43	129	131	21
95th Queue (ft)	177	43	76	322	285	65
Link Distance (ft)				1093	1093	1093
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	175	350	350			
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 4: Lowell Road (Route 3A) & Sagamore Bridge Road

Movement	EB	EB	EB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	L	R	L	L	T	T	T	T	R	R
Maximum Queue (ft)	913	930	930	575	625	1118	1128	853	933	925	250
Average Queue (ft)	862	868	833	573	623	1058	658	154	627	860	145
95th Queue (ft)	1017	1049	1203	581	639	1272	1430	468	1156	1085	346
Link Distance (ft)	873	873	873			1093	1093	890	890	890	
Upstream Blk Time (%)	50	64	56			10	1	0	2	10	
Queuing Penalty (veh)	0	0	0			81	11	1	15	77	
Storage Bay Dist (ft)				525	525						200
Storage Blk Time (%)				38	68	15				0	
Queuing Penalty (veh)				80	143	180				0	

Intersection: 5: Lowell Road (Route 3A) & Flagstone Drive/Wason Road

Movement	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	L	LT	R	L	T	T	R	L	T	T
Maximum Queue (ft)	620	275	250	564	115	750	912	928	186	216	1161	1237
Average Queue (ft)	262	241	204	539	34	745	854	654	23	23	675	784
95th Queue (ft)	578	322	342	550	120	766	1056	1186	101	93	1330	1380
Link Distance (ft)	740			522			890	890			1440	1440
Upstream Blk Time (%)	1			88			21	1			0	0
Queuing Penalty (veh)	0			0			160	10			0	2
Storage Bay Dist (ft)		250	200		75	575			275	175		
Storage Blk Time (%)	0	27	1	90	0	92	5	2		0	14	28
Queuing Penalty (veh)	0	25	6	340	0	429	19	5		0	2	116

Intersection: 5: Lowell Road (Route 3A) & Flagstone Drive/Wason Road

Movement	SB
Directions Served	TR
Maximum Queue (ft)	350
Average Queue (ft)	342
95th Queue (ft)	375
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	300
Storage Blk Time (%)	56
Queuing Penalty (veh)	226

Intersection: 6: Lowell Road (Route 3A) & Hampshire Drive/Oblate Drive

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	LT	R	L	T	TR	L	T	TR
Maximum Queue (ft)	28	38	26	33	177	187	189	16	231	296
Average Queue (ft)	5	7	3	7	66	25	33	1	62	108
95th Queue (ft)	22	24	17	28	137	104	122	9	166	235
Link Distance (ft)	434		326			1440	1440		1706	1706
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)		100		100	225			225		
Storage Blk Time (%)					0	0			0	
Queuing Penalty (veh)					0	0			0	



Intersection: 7: Lowell Road (Route 3A) & Executive Drive

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	LT	R	L	T	TR	L	T	TR
Maximum Queue (ft)	118	9	566	105	246	232	210	199	333	340
Average Queue (ft)	39	0	541	50	130	94	64	92	184	217
95th Queue (ft)	86	7	561	128	217	197	153	178	292	322
Link Distance (ft)	444		530			1706	1706		1099	1099
Upstream Blk Time (%)			94							
Queuing Penalty (veh)			0							
Storage Bay Dist (ft)		225		80	350			150		
Storage Blk Time (%)			88	11				1	9	
Queuing Penalty (veh)			103	21				8	11	

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

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB
Directions Served	LT	R	LT	R	L	T	R	L	TR
Maximum Queue (ft)	160	75	33	22	112	409	4	111	482
Average Queue (ft)	42	50	6	5	7	101	0	24	226
95th Queue (ft)	131	86	23	19	56	296	3	78	472
Link Distance (ft)	554		215			1339			473
Upstream Blk Time (%)									2
Queuing Penalty (veh)									24
Storage Bay Dist (ft)		50		100	210		325	125	
Storage Blk Time (%)	2	35				3			10
Queuing Penalty (veh)	1	5				0			2

Intersection: 9: Lowell Road (Route 3A) & Pelham Road

Movement	WB	WB	NB	SB	SB
Directions Served	L	R	TR	L	T
Maximum Queue (ft)	519	125	451	199	1074
Average Queue (ft)	491	56	153	113	610
95th Queue (ft)	509	148	358	205	1192
Link Distance (ft)	477		473		1258
Upstream Blk Time (%)	89		0		0
Queuing Penalty (veh)	0		2		4
Storage Bay Dist (ft)		75		150	
Storage Blk Time (%)	86	6		8	23
Queuing Penalty (veh)	70	15		98	17

Zone Summary

Zone wide Queuing Penalty: 2926

**2034 Build Weekday P.M.**

Intersection: 1: River Road (Route 3A)/Lowell Road (Route 3A) & Dracut Road & Steele Road

Movement	EB	EB	NB	NB	NB	SB	SB	SB	NW	NW
Directions Served	L	R>	L	T	TR	L	T	TR	<L	R
Maximum Queue (ft)	118	53	99	629	400	850	1694	1707	124	502
Average Queue (ft)	36	6	4	609	394	850	1681	1627	13	502
95th Queue (ft)	82	31	57	727	444	850	1724	1808	73	502
Link Distance (ft)	531			614			1671	1671		487
Upstream Blk Time (%)				77			48	18		100
Queuing Penalty (veh)				0			348	129		0
Storage Bay Dist (ft)		50	200		300	775			100	
Storage Blk Time (%)	18	0		94	84	93	12			97
Queuing Penalty (veh)	1	0		314	282	210	115			5

Intersection: 2: Lowell Road (Route 3A) & Site Driveway/Rena Avenue

Movement	EB	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	LTR	L	T	TR	L	T	TR
Maximum Queue (ft)	475	75	60	375	1702	1703	375	922	932
Average Queue (ft)	355	50	15	202	1666	1666	100	766	755
95th Queue (ft)	556	95	43	504	1719	1729	358	1146	1167
Link Distance (ft)	460		503		1671	1671		893	893
Upstream Blk Time (%)	33				12	12		9	8
Queuing Penalty (veh)	0				86	85		74	63
Storage Bay Dist (ft)		50		300			350		
Storage Blk Time (%)	59	38			97			78	
Queuing Penalty (veh)	34	111			39			21	

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

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	L	T	R	L	L	T	R	L	L	T	T
Maximum Queue (ft)	187	200	380	188	94	93	396	250	67	475	928	925
Average Queue (ft)	181	195	350	61	38	32	396	250	16	328	905	901
95th Queue (ft)	197	215	397	158	82	75	396	251	50	673	918	930
Link Distance (ft)			336				381				893	893
Upstream Blk Time (%)			85				91				33	22
Queuing Penalty (veh)			0				0				284	190
Storage Bay Dist (ft)	175	175		175	150	150		200	350	350		
Storage Blk Time (%)	68	76	1	4	0			93			78	42
Queuing Penalty (veh)	98	110	6	12	0			116			86	36

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

Movement	NB	SB	SB	SB	SB	SB
Directions Served	R	L	L	T	T	R
Maximum Queue (ft)	250	163	450	1114	1117	1209
Average Queue (ft)	66	78	301	743	742	597
95th Queue (ft)	210	146	588	1361	1382	1499
Link Distance (ft)				1093	1093	1093
Upstream Blk Time (%)				4	4	18
Queuing Penalty (veh)				26	30	126
Storage Bay Dist (ft)	175	350	350			
Storage Blk Time (%)				54		
Queuing Penalty (veh)				191		

Intersection: 4: Lowell Road (Route 3A) & Sagamore Bridge Road

Movement	EB	EB	EB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	L	R	L	L	T	T	T	T	R	R
Maximum Queue (ft)	893	922	923	575	625	1113	1112	433	814	847	250
Average Queue (ft)	720	891	892	573	622	1049	468	188	240	233	29
95th Queue (ft)	1125	908	907	581	642	1335	1192	331	576	850	160
Link Distance (ft)	873	873	873			1093	1093	890	890	890	
Upstream Blk Time (%)	7	56	59			7	1	0	0	1	
Queuing Penalty (veh)	0	0	0			77	6	0	2	6	
Storage Bay Dist (ft)				525	525						200
Storage Blk Time (%)				39	60	9				0	0
Queuing Penalty (veh)				147	227	129				0	0

Intersection: 5: Lowell Road (Route 3A) & Flagstone Drive/Wason Road

Movement	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	L	LT	R	L	T	T	R	L	T	T
Maximum Queue (ft)	769	275	250	538	115	203	365	439	398	237	634	702
Average Queue (ft)	635	269	179	400	24	91	230	255	197	80	200	299
95th Queue (ft)	966	306	331	601	97	170	358	400	389	178	486	621
Link Distance (ft)	740			522			890	890			1440	1440
Upstream Blk Time (%)	43			12								
Queuing Penalty (veh)	0			0								
Storage Bay Dist (ft)		250	200		75	575			275	175		
Storage Blk Time (%)	3	63	1	64				7	5	1	7	4
Queuing Penalty (veh)	15	96	2	175				75	31	3	5	15

Intersection: 5: Lowell Road (Route 3A) & Flagstone Drive/Wason Road

Movement	SB
Directions Served	TR
Maximum Queue (ft)	350
Average Queue (ft)	257
95th Queue (ft)	393
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	300
Storage Blk Time (%)	14
Queuing Penalty (veh)	48

Intersection: 6: Lowell Road (Route 3A) & Hampshire Drive/Oblate Drive

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	LT	R	L	T	TR	L	T	TR
Maximum Queue (ft)	83	101	44	37	100	327	347	27	271	328
Average Queue (ft)	17	41	12	5	13	85	102	4	73	108
95th Queue (ft)	51	83	35	24	58	232	250	19	195	255
Link Distance (ft)	434		326			1440	1440		1706	1706
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)		100		100	225			225		
Storage Blk Time (%)	0	1				1			0	
Queuing Penalty (veh)	0	0				0			0	

Intersection: 7: Lowell Road (Route 3A) & Executive Drive

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	LT	R	L	T	TR	L	T	TR
Maximum Queue (ft)	275	120	545	105	249	385	347	72	218	247
Average Queue (ft)	152	23	434	10	46	151	121	13	90	108
95th Queue (ft)	323	126	662	58	137	317	282	47	183	206
Link Distance (ft)	444		530			1706	1706		1099	1099
Upstream Blk Time (%)	5		49							
Queuing Penalty (veh)	0		0							
Storage Bay Dist (ft)		225		80	350			150		
Storage Blk Time (%)	7	0	94	2		1			2	
Queuing Penalty (veh)	6	0	24	0		0			0	

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

Movement	EB	EB	WB	WB	NB	NB	NB	B201	B201	SB	SB
Directions Served	LT	R	LT	R	L	T	R	T		L	TR
Maximum Queue (ft)	91	69	123	110	228	1070	279	384	256	192	414
Average Queue (ft)	22	35	36	39	37	601	14	161	101	49	83
95th Queue (ft)	72	72	94	95	122	1347	126	754	555	124	283
Link Distance (ft)	554		215			1339		1099	1099		473
Upstream Blk Time (%)			0			9		3	0		0
Queuing Penalty (veh)			0			128		21	0		3
Storage Bay Dist (ft)		50		100	210		325			125	
Storage Blk Time (%)	5	18	1	4		23				2	4
Queuing Penalty (veh)	1	2	0	1		11				16	2

Intersection: 9: Lowell Road (Route 3A) & Pelham Road

Movement	WB	WB	NB	SB	SB
Directions Served	L	R	TR	L	T
Maximum Queue (ft)	466	125	488	200	1272
Average Queue (ft)	271	104	330	192	1247
95th Queue (ft)	496	152	620	210	1401
Link Distance (ft)	477		473		1258
Upstream Blk Time (%)	4		6		42
Queuing Penalty (veh)	0		84		391
Storage Bay Dist (ft)		75		150	
Storage Blk Time (%)	40	52		87	4
Queuing Penalty (veh)	65	50		685	5

Zone Summary

Zone wide Queuing Penalty: 5785

**2024 Build with Improvements Weekday A.M.**

Intersection: 1: River Road (Route 3A)/Lowell Road (Route 3A) & Dracut Road & Steele Road

Movement	EB	EB	NB	NB	SB	SB	SB	NW	NW
Directions Served	L	R>	T	TR	L	L	TR	<L	R
Maximum Queue (ft)	9	42	229	201	149	163	212	26	503
Average Queue (ft)	1	4	118	75	59	80	52	1	471
95th Queue (ft)	7	23	211	175	124	141	150	17	489
Link Distance (ft)	537	537	562			1659	1659		449
Upstream Blk Time (%)									100
Queuing Penalty (veh)									0
Storage Bay Dist (ft)				300	775			100	
Storage Blk Time (%)			2						92
Queuing Penalty (veh)			3						1

Intersection: 2: Lowell Road (Route 3A) & Site Driveway/Rena Avenue

Movement	EB	EB	EB	WB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	L	TR	LTR	L	T	TR	L	T	T	TR
Maximum Queue (ft)	178	144	38	63	78	169	173	33	244	255	296
Average Queue (ft)	99	50	10	26	27	67	77	6	118	121	154
95th Queue (ft)	164	125	28	53	61	140	149	26	226	236	276
Link Distance (ft)	446	446	446	496		1659	1659		883	883	883
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)					300			350			
Storage Blk Time (%)											
Queuing Penalty (veh)											



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

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	L	T	R	L	L	T	R	L	L	T	T
Maximum Queue (ft)	135	144	28	84	17	45	33	129	49	73	296	274
Average Queue (ft)	53	61	3	34	2	12	4	52	11	36	168	123
95th Queue (ft)	104	118	16	72	12	38	21	105	36	65	262	228
Link Distance (ft)			324				373				883	883
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	175	175		175	150	150		200	350	350		
Storage Blk Time (%)	0	0									0	
Queuing Penalty (veh)	0	0									0	

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

Movement	NB	SB	SB	SB	SB	SB	SB
Directions Served	TR	L	L	T	T	T	R
Maximum Queue (ft)	181	57	92	115	165	188	91
Average Queue (ft)	83	13	43	44	88	109	17
95th Queue (ft)	153	42	77	99	147	165	62
Link Distance (ft)	883			1092	1092	1092	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)		350	350			400	
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 4: Lowell Road (Route 3A) & Sagamore Bridge Road

Movement	EB	EB	EB	NB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	L	R	L	L	L	T	T	T	T	R	R
Maximum Queue (ft)	470	566	147	217	267	266	130	168	163	828	880	250
Average Queue (ft)	228	291	0	139	177	158	32	63	81	139	420	166
95th Queue (ft)	348	439	0	211	246	242	85	131	134	420	925	360
Link Distance (ft)	873	873	873				1092	1092	1092	872	872	872
Upstream Blk Time (%)	0	0	0							0	1	
Queuing Penalty (veh)	0	0	0							0	4	
Storage Bay Dist (ft)				525	525							200
Storage Blk Time (%)											3	0
Queuing Penalty (veh)											22	0

Intersection: 5: Lowell Road (Route 3A) & Flagstone Drive/Wason Road

Movement	EB	EB	WB	WB	WB	NB	NB	NB	NB	NB	SB	SB
Directions Served	LT	R	L	LT	R	L	T	T	R	R	L	T
Maximum Queue (ft)	212	243	250	544	115	402	222	229	53	59	63	196
Average Queue (ft)	73	117	221	520	31	248	145	158	18	15	9	122
95th Queue (ft)	144	202	338	532	113	395	206	221	45	46	38	219
Link Distance (ft)	733		503		872		872		872			
Upstream Blk Time (%)				90								
Queuing Penalty (veh)				0								
Storage Bay Dist (ft)	250		200		75				275		175	
Storage Blk Time (%)	0		0		85		0				7	
Queuing Penalty (veh)	0		2		291		0				1	

Intersection: 5: Lowell Road (Route 3A) & Flagstone Drive/Wason Road

Movement	SB	SB
Directions Served	T	TR
Maximum Queue (ft)	216	225
Average Queue (ft)	190	195
95th Queue (ft)	206	210
Link Distance (ft)		
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	300	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Zone Summary

Zone wide Queuing Penalty: 324

**2024 Build with Improvements Weekday P.M.**

Intersection: 1: River Road (Route 3A)/Lowell Road (Route 3A) & Dracut Road & Steele Road

Movement	EB	EB	NB	NB	NB	SB	SB	SB	NW	NW
Directions Served	L	R>	L	T	TR	L	L	TR	<L	R
Maximum Queue (ft)	87	34	50	491	368	188	193	132	104	464
Average Queue (ft)	30	4	2	320	257	83	103	36	7	464
95th Queue (ft)	67	21	40	545	418	167	176	99	53	464
Link Distance (ft)	537		562			1659		1659		449
Upstream Blk Time (%)					5					100
Queuing Penalty (veh)					0					0
Storage Bay Dist (ft)	50		200		300		775		100	
Storage Blk Time (%)	9	0	42		12				93	
Queuing Penalty (veh)	0	0	128		36				4	

Intersection: 2: Lowell Road (Route 3A) & Site Driveway/Rena Avenue

Movement	EB	EB	EB	WB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	L	TR	LTR	L	T	TR	L	T	T	TR
Maximum Queue (ft)	217	198	57	44	78	124	133	59	131	97	107
Average Queue (ft)	128	98	16	14	27	59	69	17	52	36	48
95th Queue (ft)	199	178	40	39	63	116	121	47	114	81	100
Link Distance (ft)	446	446	446	496	1659		1659	883		883	883
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)					300			350			
Storage Blk Time (%)											
Queuing Penalty (veh)											

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

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	L	T	R	L	L	T	R	L	L	T	T
Maximum Queue (ft)	181	197	252	174	105	144	256	247	83	102	335	301
Average Queue (ft)	114	123	22	72	19	66	32	152	25	51	228	172
95th Queue (ft)	185	194	117	146	61	120	129	241	63	90	317	263
Link Distance (ft)			324				373				883	883
Upstream Blk Time (%)			0				0					
Queuing Penalty (veh)			0				0					
Storage Bay Dist (ft)	175	175		175	150	150		200	350	350		
Storage Blk Time (%)	0	2	0	1	0	0		4			0	
Queuing Penalty (veh)	0	3	0	4	0	1		5			0	

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

Movement	NB	SB	SB	SB	SB	SB	SB
Directions Served	TR	L	L	T	T	T	R
Maximum Queue (ft)	298	148	167	721	892	315	74
Average Queue (ft)	156	73	94	67	108	90	20
95th Queue (ft)	239	127	144	319	453	272	57
Link Distance (ft)	883			1092	1092	1092	
Upstream Blk Time (%)					0	0	
Queuing Penalty (veh)					0	0	
Storage Bay Dist (ft)		350	350				400
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 4: Lowell Road (Route 3A) & Sagamore Bridge Road

Movement	EB	EB	EB	NB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	L	R	L	L	L	T	T	T	T	R	R
Maximum Queue (ft)	889	922	913	400	496	489	372	396	271	340	775	250
Average Queue (ft)	860	892	891	268	342	341	110	237	168	177	189	86
95th Queue (ft)	958	908	902	375	476	470	256	347	244	275	606	281
Link Distance (ft)	873	873	873				1092	1092	1092	871	871	871
Upstream Blk Time (%)	14	72	57									0
Queuing Penalty (veh)	0	0	0									1
Storage Bay Dist (ft)				525	525							200
Storage Blk Time (%)					0	0					2	0
Queuing Penalty (veh)					1	1					15	0

Intersection: 5: Lowell Road (Route 3A) & Flagstone Drive/Wason Road

Movement	EB	EB	WB	WB	WB	NB	NB	NB	NB	NB	SB	SB
Directions Served	LT	R	L	LT	R	L	T	T	R	R	L	T
Maximum Queue (ft)	390	274	250	525	115	167	278	288	88	115	130	188
Average Queue (ft)	142	201	221	525	33	81	173	187	50	68	57	94
95th Queue (ft)	300	293	331	525	115	148	247	265	78	103	112	175
Link Distance (ft)	739		510		871		871		871			
Upstream Blk Time (%)					86							
Queuing Penalty (veh)					0							
Storage Bay Dist (ft)	250		200		75				275		175	
Storage Blk Time (%)	0	6	6	83			1				2	
Queuing Penalty (veh)	0	9	15	208			6				1	

Intersection: 5: Lowell Road (Route 3A) & Flagstone Drive/Wason Road

Movement	SB	SB
Directions Served	T	TR
Maximum Queue (ft)	200	219
Average Queue (ft)	173	192
95th Queue (ft)	225	209
Link Distance (ft)		
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	300	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Zone Summary

Zone wide Queuing Penalty: 438

**2034 Build with Improvements Weekday A.M.**

Intersection: 1: River Road (Route 3A)/Lowell Road (Route 3A) & Dracut Road & Steele Road

Movement	EB	EB	NB	NB	SB	SB	SB	NW	NW
Directions Served	L	R>	T	TR	L	L	TR	<L	R
Maximum Queue (ft)	15	37	251	220	146	149	213	44	503
Average Queue (ft)	1	4	135	93	65	81	58	2	471
95th Queue (ft)	8	25	222	192	130	137	153	24	492
Link Distance (ft)	537	537	562			1659	1659		449
Upstream Blk Time (%)									100
Queuing Penalty (veh)									0
Storage Bay Dist (ft)				300	775			100	
Storage Blk Time (%)			3	0					92
Queuing Penalty (veh)			5	0					1

Intersection: 2: Lowell Road (Route 3A) & Site Driveway/Rena Avenue

Movement	EB	EB	EB	WB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	L	TR	LTR	L	T	TR	L	T	T	TR
Maximum Queue (ft)	175	141	38	74	69	184	203	54	278	268	300
Average Queue (ft)	91	41	11	27	25	82	85	8	127	131	168
95th Queue (ft)	152	105	31	56	58	163	164	35	238	240	288
Link Distance (ft)	446	446	446	496		1659	1659		883	883	883
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)					300			350			
Storage Blk Time (%)											
Queuing Penalty (veh)											



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

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	L	T	R	L	L	T	R	L	L	T	T
Maximum Queue (ft)	133	136	24	102	9	48	33	127	41	71	321	257
Average Queue (ft)	52	64	2	34	1	13	5	53	8	36	189	130
95th Queue (ft)	103	118	13	79	7	41	24	104	31	64	283	221
Link Distance (ft)			324				373				883	883
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	175	175		175	150	150		200	350	350		
Storage Blk Time (%)												0
Queuing Penalty (veh)												0

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

Movement	NB	SB	SB	SB	SB	SB	SB
Directions Served	TR	L	L	T	T	T	R
Maximum Queue (ft)	181	60	87	137	167	198	82
Average Queue (ft)	91	15	44	50	95	118	16
95th Queue (ft)	165	45	75	106	156	178	55
Link Distance (ft)	883			1092	1092	1092	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)		350	350			400	
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 4: Lowell Road (Route 3A) & Sagamore Bridge Road

Movement	EB	EB	EB	NB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	L	R	L	L	L	T	T	T	T	R	R
Maximum Queue (ft)	587	778	762	239	300	302	114	140	185	894	893	250
Average Queue (ft)	347	428	82	150	187	169	29	58	80	197	476	184
95th Queue (ft)	572	698	471	225	259	262	76	122	143	604	982	364
Link Distance (ft)	873	873	873				1092	1092	1092	872	872	872
Upstream Blk Time (%)	0	1	1							0	1	
Queuing Penalty (veh)	0	0	0							1	5	
Storage Bay Dist (ft)				525	525							200
Storage Blk Time (%)												4
Queuing Penalty (veh)												31

Intersection: 5: Lowell Road (Route 3A) & Flagstone Drive/Wason Road

Movement	EB	EB	WB	WB	WB	NB	NB	NB	NB	NB	SB	SB
Directions Served	LT	R	L	LT	R	L	T	T	R	R	L	T
Maximum Queue (ft)	159	234	250	546	115	556	434	439	224	54	94	203
Average Queue (ft)	75	122	230	519	37	358	183	194	27	17	10	140
95th Queue (ft)	133	204	324	529	125	626	334	319	111	47	48	229
Link Distance (ft)	733		503		872		872		872			
Upstream Blk Time (%)			89		0		0		0			
Queuing Penalty (veh)			0		1		0		0			
Storage Bay Dist (ft)	250		200		75				275		175	
Storage Blk Time (%)	0		0		85		0		1		0	
Queuing Penalty (veh)	0		2		323		0		3		0	

Intersection: 5: Lowell Road (Route 3A) & Flagstone Drive/Wason Road

Movement	SB	SB
Directions Served	T	TR
Maximum Queue (ft)	212	226
Average Queue (ft)	189	196
95th Queue (ft)	208	212
Link Distance (ft)		
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	300	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Zone Summary

Zone wide Queuing Penalty: 372

**2034 Build with Improvements Weekday P.M.**

Intersection: 1: River Road (Route 3A)/Lowell Road (Route 3A) & Dracut Road & Steele Road

Movement	EB	EB	NB	NB	SB	SB	SB	NW	NW
Directions Served	L	R>	T	TR	L	L	TR	<L	R
Maximum Queue (ft)	87	59	578	400	203	216	120	81	464
Average Queue (ft)	32	6	524	382	92	112	36	7	464
95th Queue (ft)	69	29	677	456	170	185	96	52	464
Link Distance (ft)	537		562			1659	1659		449
Upstream Blk Time (%)			40						100
Queuing Penalty (veh)			0						0
Storage Bay Dist (ft)		50		300	775			100	
Storage Blk Time (%)	11	0	82	52					92
Queuing Penalty (veh)	0	0	274	175					5

Intersection: 2: Lowell Road (Route 3A) & Site Driveway/Rena Avenue

Movement	EB	EB	EB	WB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	L	TR	LTR	L	T	TR	L	T	T	TR
Maximum Queue (ft)	200	197	65	43	72	127	142	61	142	112	128
Average Queue (ft)	123	95	18	14	28	60	70	20	57	39	48
95th Queue (ft)	193	176	44	40	66	114	121	54	119	90	103
Link Distance (ft)	446	446	446	496		1659	1659		883	883	883
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)					300			350			
Storage Blk Time (%)											
Queuing Penalty (veh)											

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

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	L	T	R	L	L	T	R	L	L	T	T
Maximum Queue (ft)	185	194	253	189	109	170	343	250	67	90	359	322
Average Queue (ft)	116	130	34	78	22	73	64	170	23	46	239	184
95th Queue (ft)	183	202	170	149	68	140	230	254	57	82	333	268
Link Distance (ft)			324				373				883	883
Upstream Blk Time (%)			1				0					
Queuing Penalty (veh)			0				0					
Storage Bay Dist (ft)	175	175		175	150	150		200	350	350		
Storage Blk Time (%)	2	4	0	1	0	0		8			1	
Queuing Penalty (veh)	3	6	0	3	0	1		10			1	

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

Movement	NB	SB	SB	SB	SB	SB	SB
Directions Served	TR	L	L	T	T	T	R
Maximum Queue (ft)	271	136	155	487	488	514	77
Average Queue (ft)	165	70	93	75	71	88	18
95th Queue (ft)	246	119	140	348	272	294	56
Link Distance (ft)	883			1092	1092	1092	
Upstream Blk Time (%)					0	0	
Queuing Penalty (veh)					0	1	
Storage Bay Dist (ft)		350	350				400
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 4: Lowell Road (Route 3A) & Sagamore Bridge Road

Movement	EB	EB	EB	NB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	L	R	L	L	L	T	T	T	T	R	R
Maximum Queue (ft)	898	916	915	469	562	629	355	410	313	522	868	250
Average Queue (ft)	862	891	890	308	389	394	119	245	200	225	283	133
95th Queue (ft)	944	904	902	433	533	550	258	355	295	403	747	338
Link Distance (ft)	873	873	873				1092	1092	1092	871	871	871
Upstream Blk Time (%)	16	71	60								0	0
Queuing Penalty (veh)	0	0	0								0	1
Storage Bay Dist (ft)				525	525							200
Storage Blk Time (%)				0	2	2					4	0
Queuing Penalty (veh)				0	9	22					25	0

Intersection: 5: Lowell Road (Route 3A) & Flagstone Drive/Wason Road

Movement	EB	EB	WB	WB	WB	NB	NB	NB	NB	NB	SB	SB
Directions Served	LT	R	L	LT	R	L	T	T	R	R	L	T
Maximum Queue (ft)	485	275	250	525	115	162	268	267	104	122	158	190
Average Queue (ft)	178	225	226	525	33	80	170	181	54	73	66	98
95th Queue (ft)	379	310	326	525	116	145	238	248	85	113	133	196
Link Distance (ft)	739		510		871		871		871			
Upstream Blk Time (%)					88							
Queuing Penalty (veh)					0							
Storage Bay Dist (ft)	250		200		75		275		275		175	
Storage Blk Time (%)	0	11	5	86	0	0				0	3	
Queuing Penalty (veh)	2	17	16	236	0	4				2	2	

Intersection: 5: Lowell Road (Route 3A) & Flagstone Drive/Wason Road

Movement	SB	SB
Directions Served	T	TR
Maximum Queue (ft)	202	215
Average Queue (ft)	184	193
95th Queue (ft)	218	203
Link Distance (ft)		
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	300	
Storage Blk Time (%)		
Queuing Penalty (veh)		

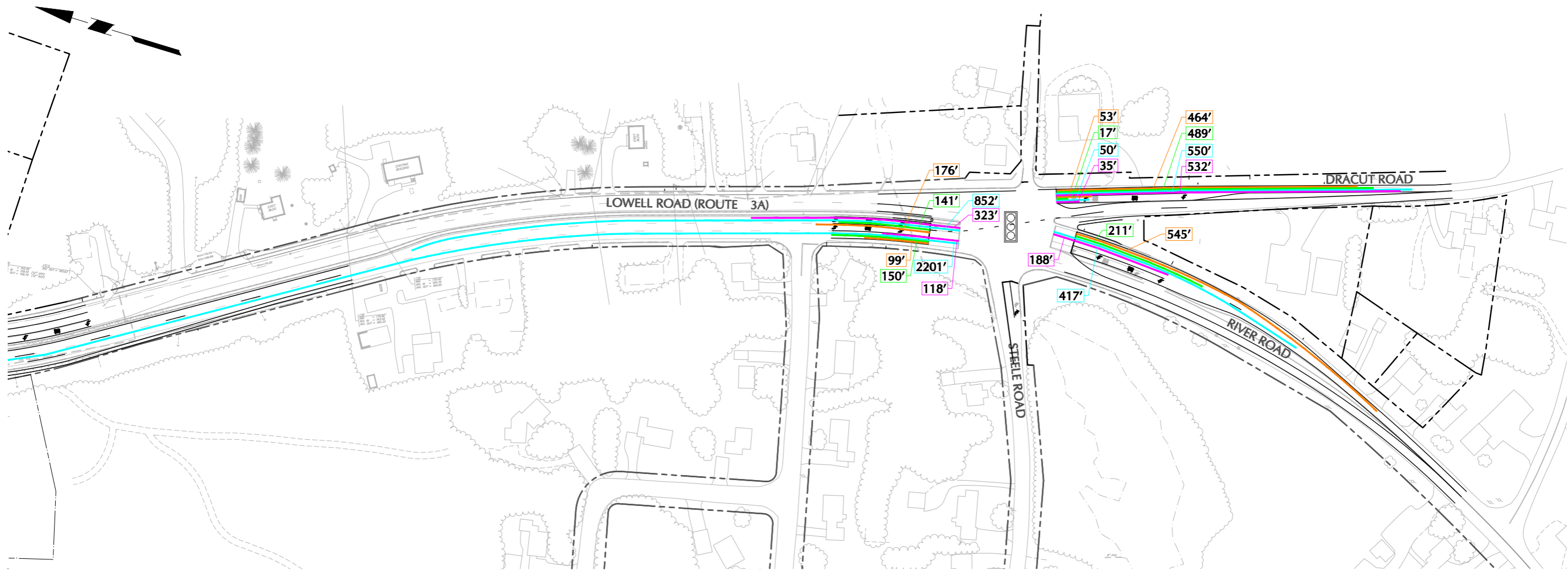
Zone Summary

Zone wide Queuing Penalty: 814

**Appendix L**  
**Queueing Comparison Figures**

**95TH PERCENTILE QUEUE LENGTHS**

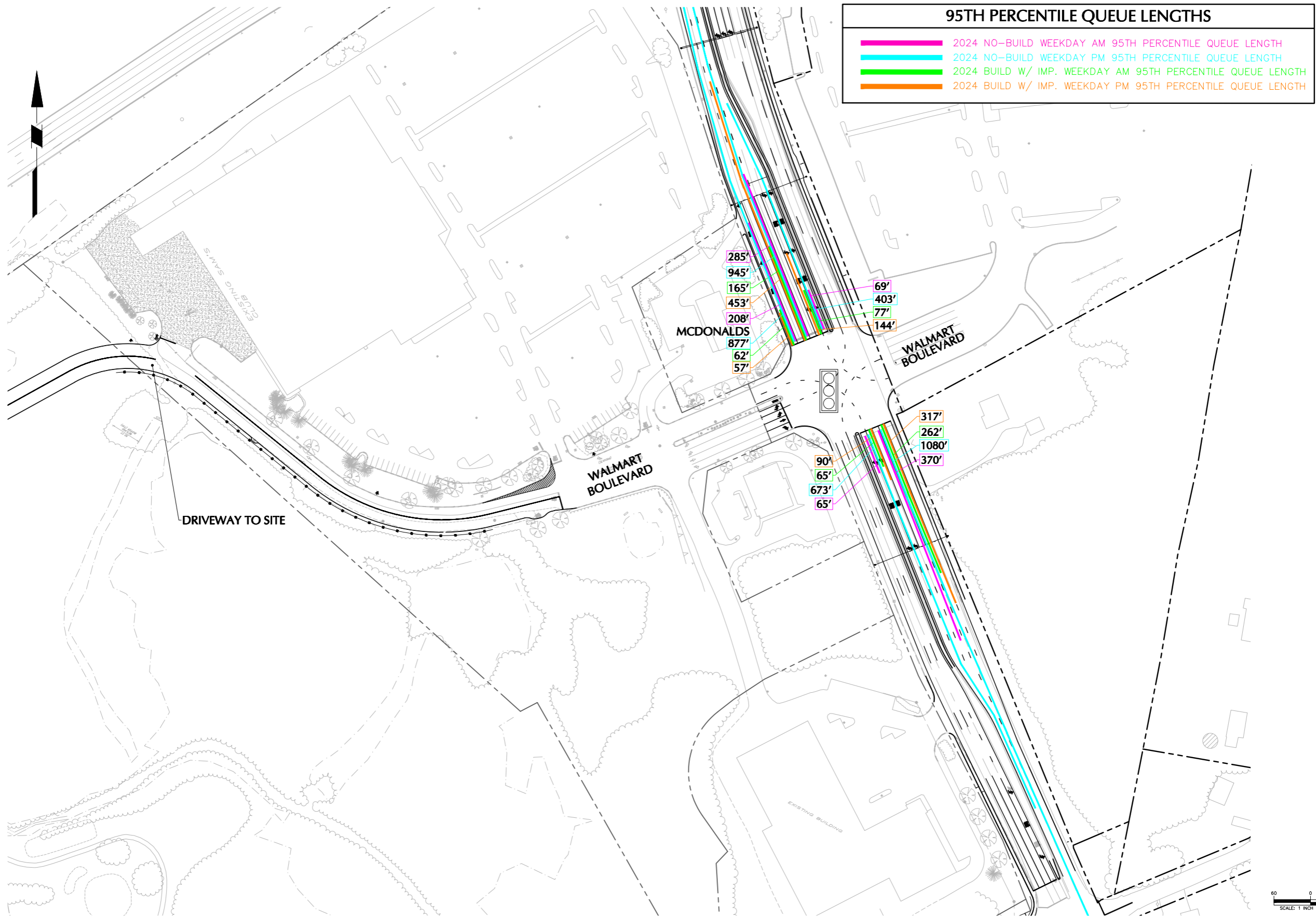
- █ 2024 NO-BUILD WEEKDAY AM 95TH PERCENTILE QUEUE LENGTH
- █ 2024 NO-BUILD WEEKDAY PM 95TH PERCENTILE QUEUE LENGTH
- █ 2024 BUILD W/ IMP. WEEKDAY AM 95TH PERCENTILE QUEUE LENGTH
- █ 2024 BUILD W/ IMP. WEEKDAY PM 95TH PERCENTILE QUEUE LENGTH



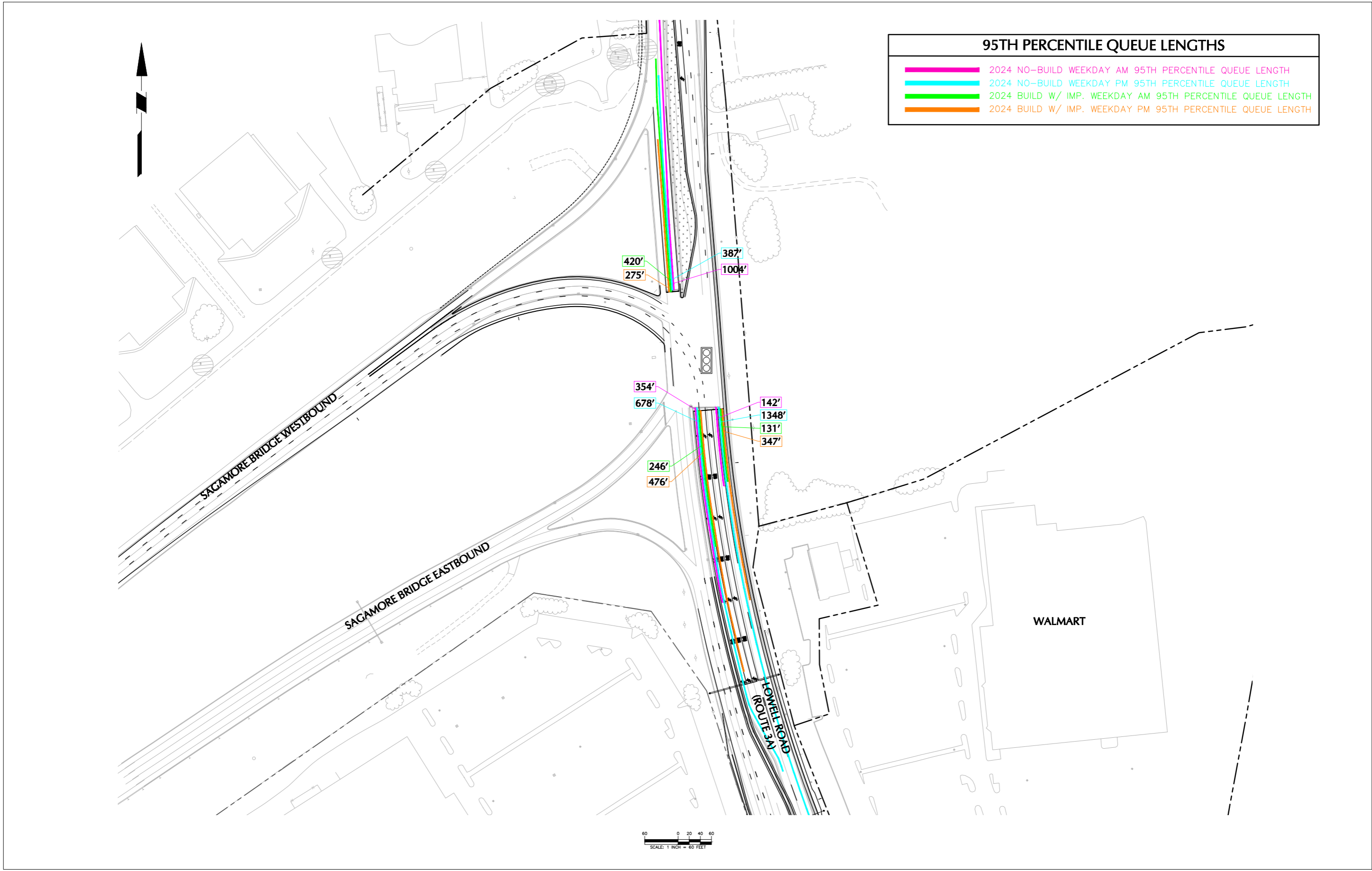
**2024 95TH PERCENTILE QUEUES - LOWELL/RIVER/DRACUT/STEELE  
HUDSON LOGISTICS CENTER**







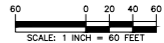
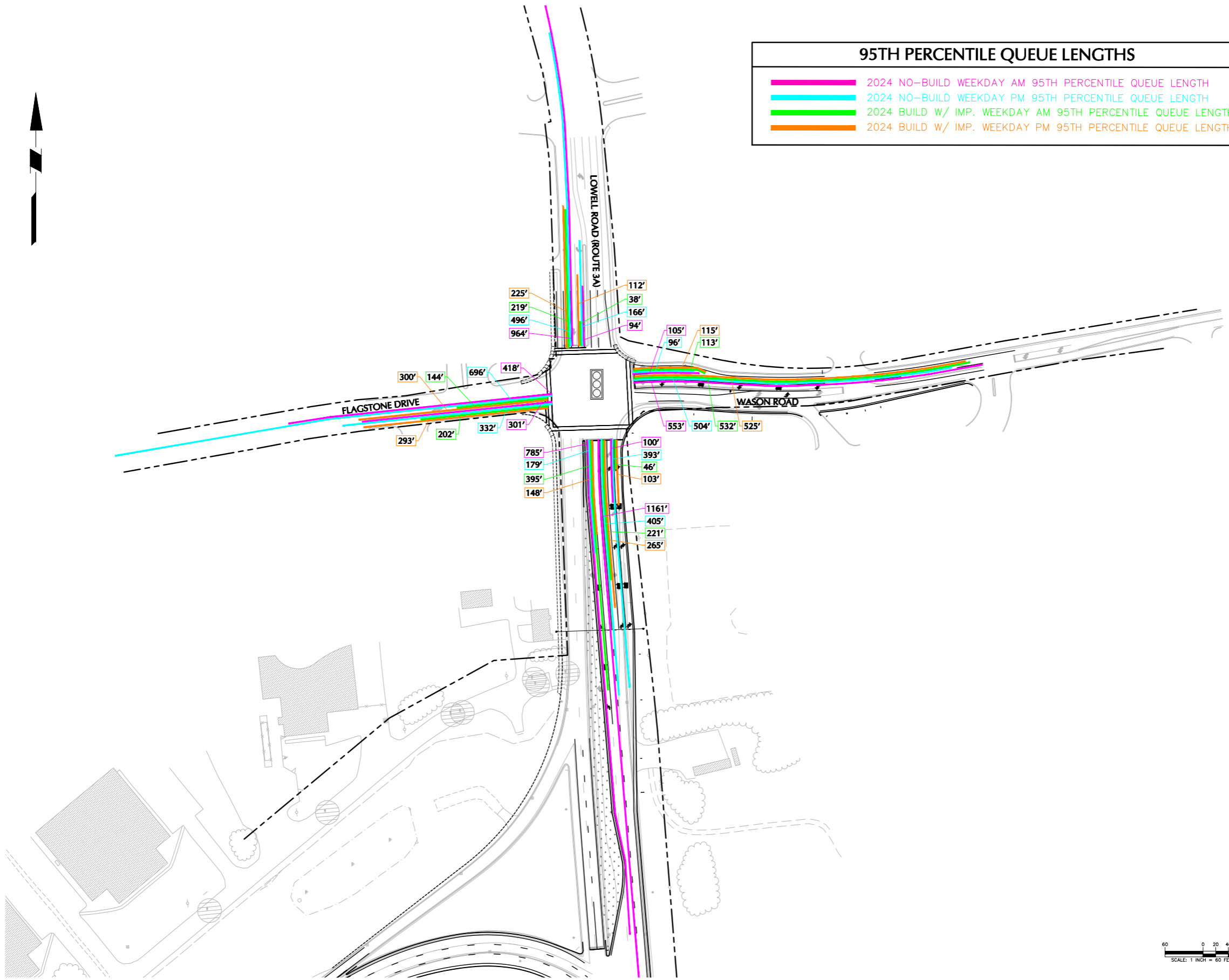
**2024 95TH PERCENTILE QUEUES - LOWELL ROAD & WALMART BOULEVARD  
HUDSON LOGISTICS CENTER**



2024 95TH PERCENTILE QUEUES - LOWELL ROAD & SAGAMORE BRIDGE ROAD  
HUDSON LOGISTICS CENTER



95TH PERCENTILE QUEUE LENGTHS	
	2024 NO-BUILD WEEKDAY AM 95TH PERCENTILE QUEUE LENGTH
	2024 NO-BUILD WEEKDAY PM 95TH PERCENTILE QUEUE LENGTH
	2024 BUILD W/ IMP. WEEKDAY AM 95TH PERCENTILE QUEUE LENGTH
	2024 BUILD W/ IMP. WEEKDAY PM 95TH PERCENTILE QUEUE LENGTH



2024 95TH PERCENTILE QUEUES - LOWELL ROAD & FLAGSTONE DRIVE/WASON ROAD  
HUDSON LOGISTICS CENTER



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