

Traffic Report



Traffic Impact and Access Study

Proposed Gas Station / Convenience Store
157 Lowell Road
Hudson, New Hampshire

TFM Project #18149.00

December 12, 2023

Prepared for:
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Submitted to:
Town of Hudson

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Proposed Gas Station/Convenience Store with Car Wash 157 Lowell Road Hudson, New Hampshire

December 12, 2023

TFM# 18149.00

1. Introduction:

TFMoran Inc. has completed this traffic impact and access study to determine the traffic impacts associated with this site development proposal of a convenience store/gas station with drive-thru window and automatic car wash. The objective of the study are:

- To estimate trip generation and distribution for the proposed use to perform capacity analysis for the project study area
- To determine potential traffic impacts of the proposed development use
- To provide recommendations for operational improvements within the study area to mitigate the proposed development's traffic impacts

Proposal

This site development project includes the development of a 5,400 sf convenience store with a drive-thru window, 12 vehicle fueling positions (vfp), and an automatic car wash. There are two full access driveways, one on Lowell Road and the other connecting to Atwood Avenue.

The existing site (Map 198 Lots 11, 12, 14, 15 & 16) is within the Business Zone and is bordered on three sides by Lowell Road, Atwood Avenue and Temple Street. The Lots are about 3.4 acres and contain two garages and a residential home.

Scope of Study – Per traffic scoping meeting with Town on April 19, 2023.

At the traffic scoping meeting held at the Hudson Town offices with Town Staff, F&O reviewer and TFM, it was agreed that this study would consider the following conditions:

Analysis Periods:

- Weekday AM and PM roadway peak hours

Covid/Stay-at-Home Volume Adjustments:

- New count volumes will be adjusted by a Covid/Stay-at-Home factor, if necessary, per NHDOT methodology.
- Volumes used from Langan Target study are already adjusted.

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Background growth:

- 1% average annual growth rate

Seasonal Adjustment:

- NHDOT Group 4 data for seasonal adjustment

Opening Year/Future Year:

- 2024/2034

Other Developments:

- Hudson Logistics Center (updated for Target).

Site Trip Generation/Composition:

- Trip Generation and Composition is based on the current ITE Trip Generation 11th Edition
 - LUC 945 Convenience Store/Gas Station
 - Primary/Pass-By Link distribution will be based on ITE

Site Trip Distribution

- Prorated based on existing volumes

Study Area Intersections:

- a. Lowell Road at Central Street
- b. Lowell Road at County Road (N)
- c. Lowell Road at Site Driveway
- d. Lowell Road at County Road (S)
- e. Lowell Road at Atwood Ave.
- f. Atwood Ave at Site Driveway
- g. Lowell Road at Pelham Road

2. Existing Conditions:

Description of Roadways and Intersections:

Roadways

Lowell Road (NH3A)

- **Classification.** Lowell Road (NH3A) is a Town-maintained north-south arterial roadway. The north end of Lowell Road terminates at Central Street and to the south the roadway ends at the junction of Dracut Road and River Road.
- **Lane widths and usage.** In the study area, the roadway provides a 3-lane section with an 11-foot wide two-way left turn lane (TWLTL) in the center from Pelham Road up to Central Street. Typical lane width is 12 feet with 4-foot wide shoulders.
- **Pedestrian facilities.** There is a sidewalk along the east side of the roadway from Central Street to Birch Street.
- **Signage.** The speed limit is posted at 30 mph within the study area. Other traffic signage includes lane use, TWLTL signs, directional signs, street name signs and stop signs at major driveways and intersections. Pavement markings consist of a center TWLTL and shoulder markings in fair condition.
- **Lighting.** Roadway lighting is present along the roadway.
- **Adjacent uses and driveways.** Adjacent uses include various commercial and small business properties and residential.

Central Street

- **Classification.** Central Street is a Town of Hudson minor arterial roadway that provides east-west travel from Nashua to Windham.
- **Lane widths and usage.** The roadway generally provides one 12' travel lane in each direction in the study area, with turn lanes and intersections, and 2-6' wide paved shoulders.
- **Pedestrian facilities.** There are sidewalks on both sides of the street in the study area.
- **Signage.** The posted speed limit is 30 mph. There are lane use signs, NH Route Signs, Do Keep Right signs and Street signs. Pavement markings consist of double-yellow centerline and white shoulder markings.
- **Lighting.** Cobra-head roadway lighting is generally provided at intersections.
- **Road conditions.** The roadway is generally flat with closed drainage and normal crown throughout. The pavement is in fair to good condition.
- **Adjacent uses and driveways.** Residential.

County Road

- **Classification.** County Road is a local loop roadway. Both ends are connected to Lowell Road.
- **Lane widths and usage.** The roadway provides two way travel with varying widths.
- **Pedestrian facilities.** There are no sidewalks in the study area.
- **Signage.** The speed limit is 30 mph. There is a stop sign at each end, and in the center where the road intersects Belknap Road. There is only double yellow centerline striping along the roadway.
- **Lighting.** No roadway lighting.

- Road conditions. The roadway is generally flat with minimal curves, open drainage, and normal crown throughout. The pavement is in fair condition with cracking and pavement patches.
- Adjacent uses and driveways. Residential.

Atwood Avenue

- Classification. Atwood Avenue is a Town-maintained local dead-end roadway that provides east-west access connected to Lowell Road. The following descriptions apply within the study area.
- Lane widths and usage. In the project vicinity, the roadway generally provides two 12' travel lanes in each direction with no paved shoulders.
- Pedestrian facilities. There are no sidewalks within the study area.
- Signage. There is a road name sign but no other signage. There are no pavement markings.
- Lighting. Cobra-head roadway lighting is provided at the Lowell Road intersection.
- Road conditions. The roadway is level and straight, with closed drainage and normal crown. The pavement is in fair to good condition.
- Adjacent uses and driveways. Adjacent uses include various and small business properties and residential.

Pelham Road

- Classification. Pelham Road is a Town-maintained east-west collector roadway that begins at Lowell Road and heads east into residential areas.
- Lane widths and usage. In the study area, the roadway provides two 11-foot wide travel lanes in each direction with 4-foot shoulders.
- Pedestrian facilities. There are sidewalks on both sides of the road from Lowell Road extending about 500' eastward.
- Signage. The speed limit is posted at 30 mph within the study area. Other traffic signage includes directional signs, street name signs and stop signs at major driveways.
- Lighting. No roadway lighting.
- Adjacent uses and driveways. Adjacent uses include various commercial and small business properties, residential and an elementary school.

Intersections

Lowell Road at Central Street

- Traffic Control. This is an existing 3-way signalized intersection. Central Street forms the eastbound and westbound approaches and Lowell Road is the southbound approach.
- Pedestrian facilities. There are sidewalks on all sides of the streets.
- Approaches. The EB approach has an exclusive left turn lane and a through lane. The WB approach provides both right and left turn lanes. The NB approach has a right turn lane and a through lane. Each approach has a concrete median dividing entering and exiting vehicles.
- Signage. "Keep Right", land use signs and street name signs are the only signs present on all approaches of the intersection.

- Lighting. Cobra-head style lighting is provided at and approaching the intersection.
- Roadway condition. Existing roadway is in good condition through the intersection.
- Signal Timing. Existing data provided by Town GRIDSMART.

Lowell Road at County Road (N)

- Traffic Control. This is an existing 3-way unsignalized intersection. However, there are multiple driveways that also access Lowell Road in very close vicinity to this intersection. Lowell Road forms the NB and SB approaches. County Road (N) forms the WB approach.
- Pedestrian facilities. There is a sidewalk on the east side of Lowell Road.
- Approaches. Each approach accommodates two way traffic. The NB and SB approaches have a TWLTL in the center. The WB approach is a single lane accommodating all turns.
- Signage. There is a stop sign on the WB approach and street name sign.
- Lighting. Cobra-head style lighting is provided at the SE corner.
- Roadway condition. Existing roadways in good condition.

Lowell Road at County Road (S)

- Traffic Control. This is an existing 3-way unsignalized intersection. Lowell Road forms the NB and SB approaches. County Road (S) forms the WB approach.
- Pedestrian facilities. None.
- Approaches. Each approach accommodates two way traffic. The NB and SB approaches have a TWLTL in the center. The WB approach is a single lane accommodating all turns.
- Signage. There is a stop sign on the WB approach and street name sign.
- Lighting. Cobra-head style lighting is provided NW of the intersection.
- Roadway condition. Existing roadways in good condition.

Lowell Road at Atwood Avenue

- Traffic Control. This is an existing 3-way unsignalized intersection. Lowell Road forms the NB and SB approaches. Atwood Avenue is a dead-end and forms the EB approach.
- Pedestrian facilities. None.
- Approaches. Each approach accommodates two way traffic. The NB and SB approaches have a TWLTL in the center. The EB approach is a single lane accommodating all turns.
- Signage. There is a street name sign on a nearby telephone pole.
- Lighting. Cobra head lighting is provided on the NW corner.
- Roadway condition. Existing roadways in good condition.

Lowell Road at Pelham Road

- Traffic Control. This is an existing 3-way signalized intersection. Lowell Road forms the NB and SB approaches. Pelham Road forms the WB approach.
- Pedestrian facilities. Pedestrian crosswalk and pushbutton-actuated ped signals are provided at the westbound approach, with an exclusive all-red pedestrian phase. Sidewalks provided on the east side of Lowell Road and both sides of Pelham Road.
- Approaches. The WB approaches consist of a left turn lane and a right turn lane. The NB approach has one shared right-turn/thru lane. The SB approach provides an exclusive left turn lane and a thru lane.

- **Signage.** Street name, “Right turn on Red” signage and school signs are present at the intersection.
- **Lighting.** Cobra-head style lighting is provided at the NE and SW corners of the intersection.
- **Roadway condition.** Existing roadway is in good condition through the intersection.
- **Signal Timing.** Existing data provided by Town GRIDSMART.

3. Background Volumes:

To quantify existing Base peak hour traffic volumes within the study area, turning movement counts were taken at the study intersections and data was provided by the Town of Hudson. These counts are tabulated in the Appendix.

Counts were taken at the following intersections on Thursday May 4, 2023 during the hours of 7AM to 9AM, 2PM to 6PM:

- Lowell Road at County Road (N)
- Lowell Road at County Road (S)
- Lowell Road at Atwood Avenue

24hr GRIDMART data provided by the Town on Thursday May 4, 2023 at the following intersections:

- Lowell Road at Central Street
- Lowell Road at Pelham Road

Seasonal Adjustment.

To account for seasonal variations, the data was seasonally adjusted upward by a factor of 3% during May to reflect the estimated park month traffic volume.

COVID/Stay-at Home Adjustment.

The NHDOT methodology to adjust traffic volumes to pre-pandemic levels involves using MS2 count station data from three nearby permanent stations. This data is then averaged for pre- and post-Covid volumes for one month, to develop an adjustment factor for each peak hour.

These calculations show that volumes in May 2023 are still below the May 2019 volumes; thus, the Base condition volumes for weekdays are adjusted by -7.4% during the AM Peak hour and -5.2% for the PM Peak hour.

Signal Timings

Existing signal timing is based on Town of Hudson GRIDSMART data provided. The timings are attached in the appendix.

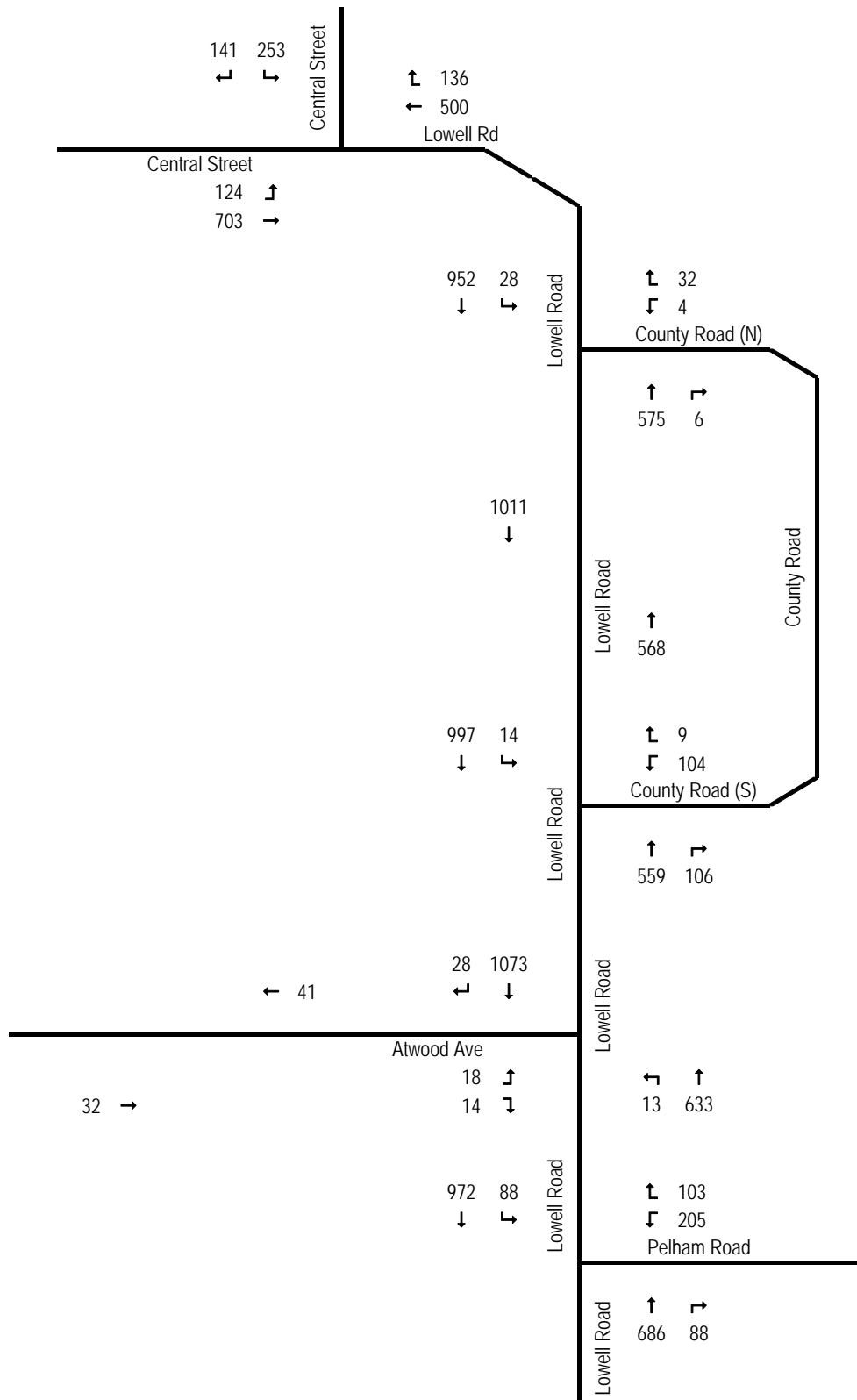
Balance

Volumes were balanced along Loudon Road between the County Road (S) intersection and the Atwood Avenue intersection.

The Base volumes are shown in the following figures:

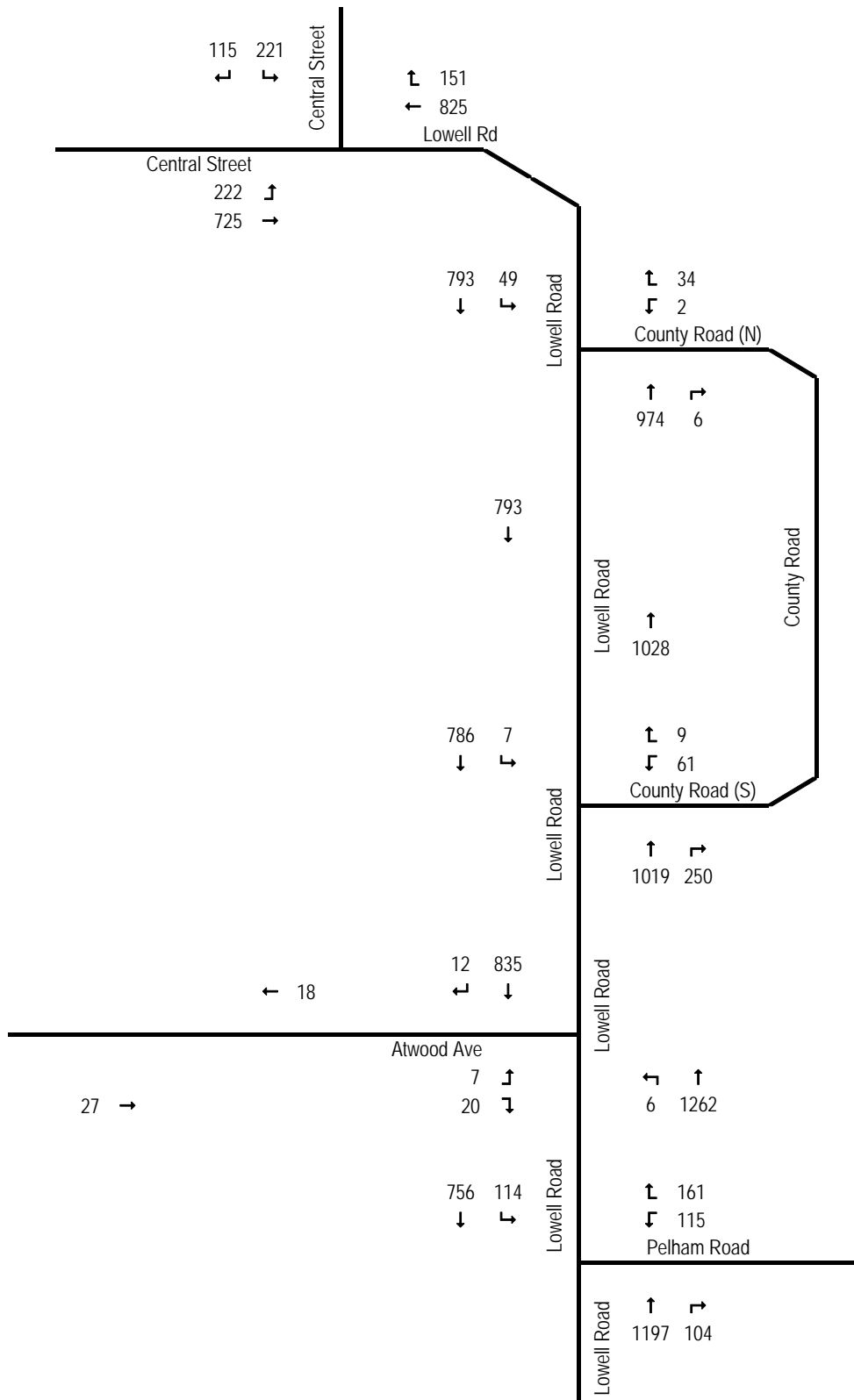
2023 BASE
 AM Peak Hour

XX Volumes



2023 BASE
 PM Peak Hour

XX Volumes



4. No-Build Volumes:

To establish No-Build traffic volumes for this study, the following adjustments were made to the Covid- and seasonally adjusted 2023 Base volumes:

Growth Factor.

A 1% compound annual growth rate was used to account for general population growth and possible traffic generated by smaller future developments in the area. No-build volumes for the opening and future years (2024, 2034) are presented in the following figures.

Other Developments.

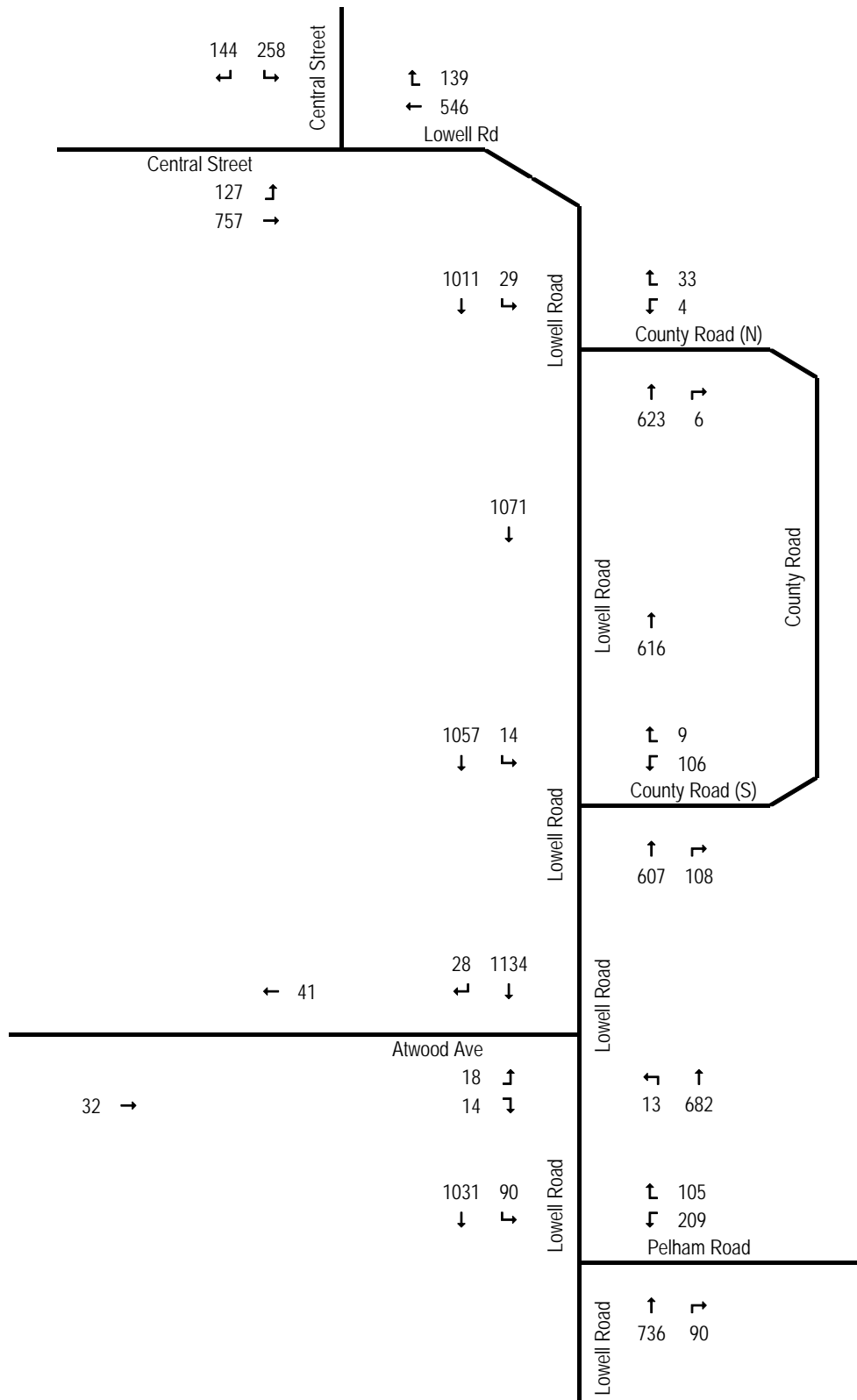
Per the scoping meeting, one approved development was identified as generating traffic volumes that should be accounted for in the no-build volumes for this traffic study. This development, as well as the trip generation methodology for the peak hours, are described below and data and distribution are in the Appendix:

- Hudson Logistics Center (Target), Hudson NH – 43 Lowell Road:
This project was amended in September 2022 for a fulfillment center warehouse (Target) that is a 42% reduction in trips from the previously approved distribution hub project (Amazon). This facility is a link in the Tenant's supply chain and will not serve customers directly. Previously approved mitigation improvements are still being proposed.

The total no-build volumes for the opening (2024) and future (2034) years are presented in the figures below.

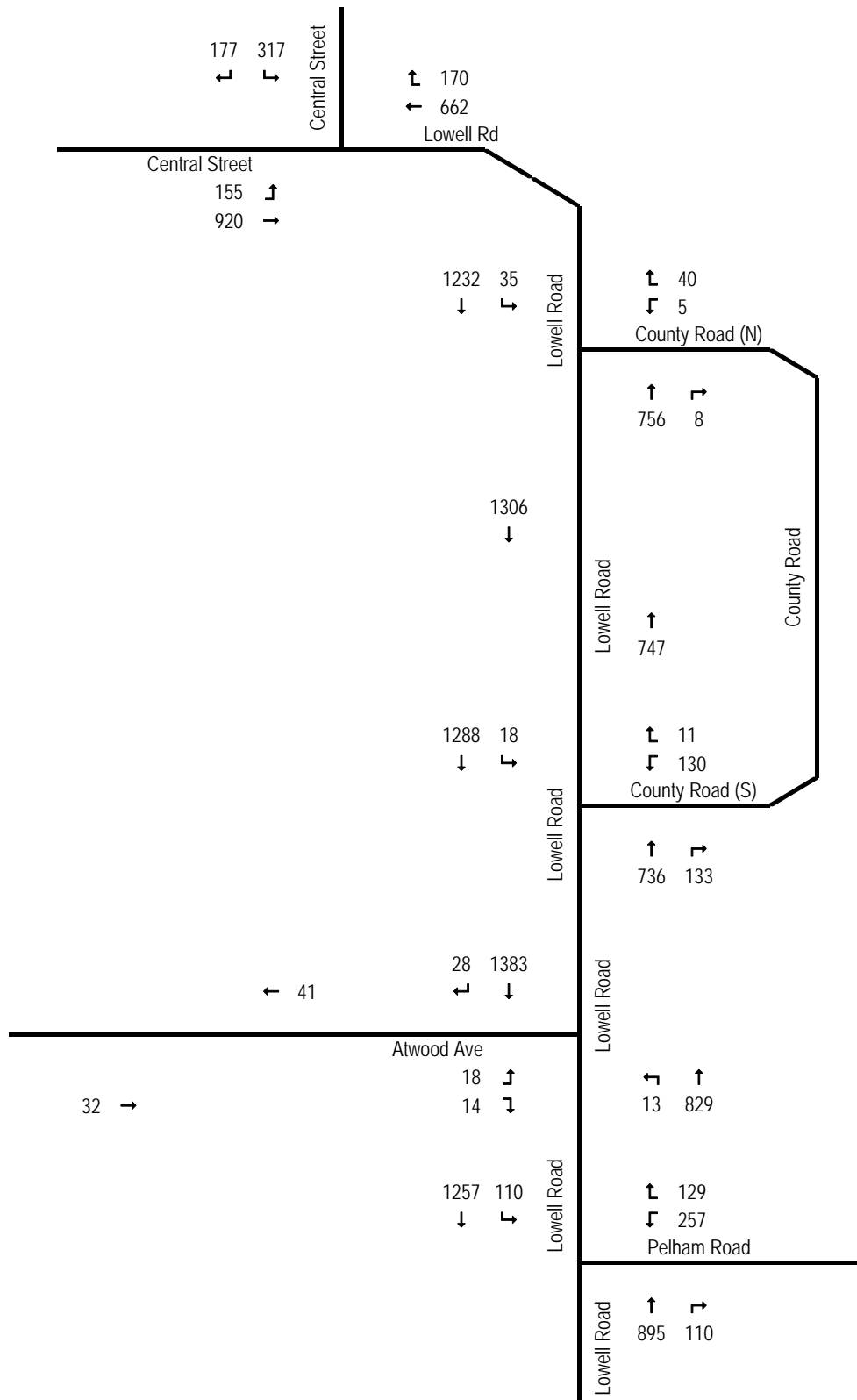
2024 NoBUILD
 AM Peak Hour

XX Volumes



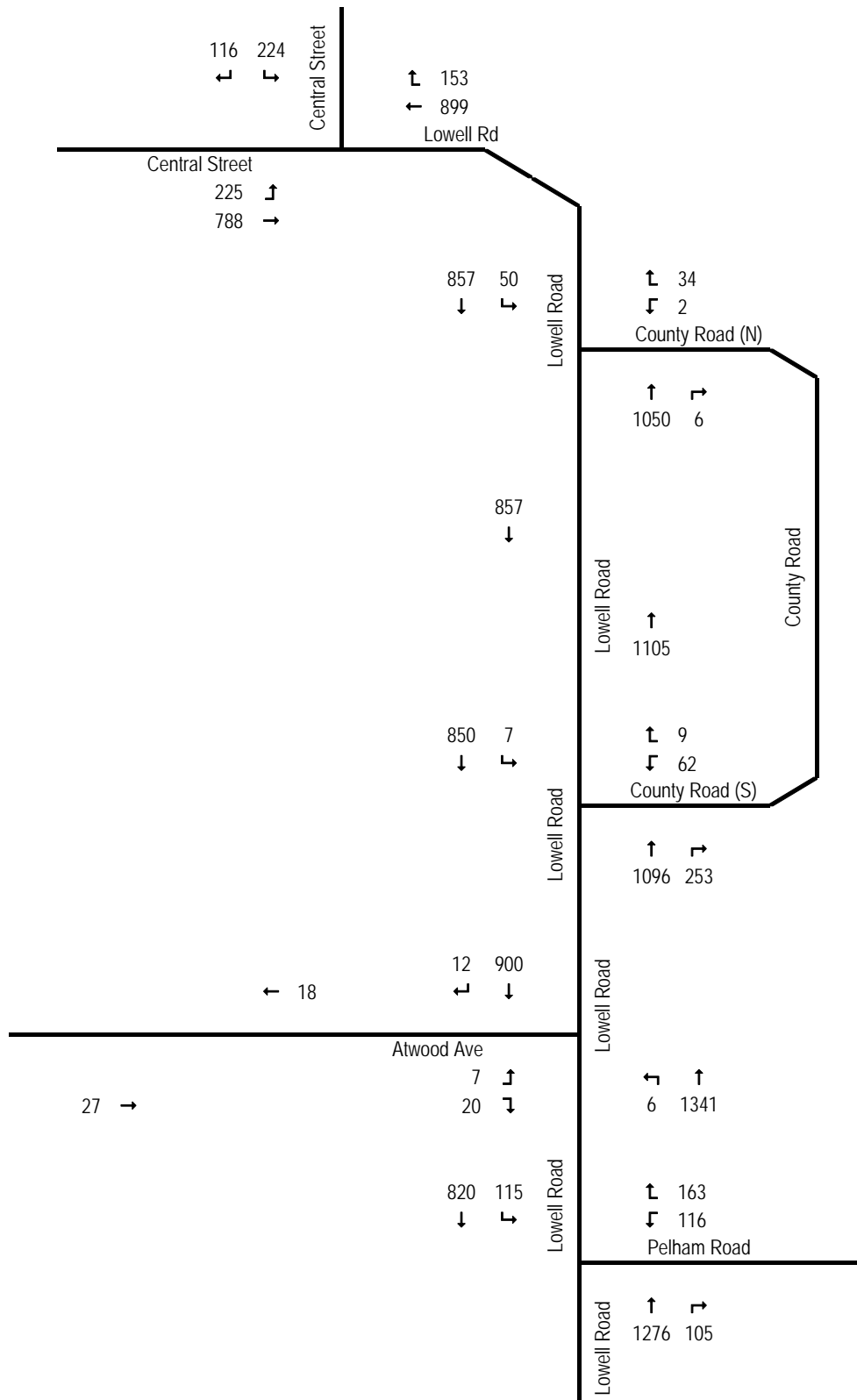
2034 NoBUILD
 AM Peak Hour

XX Volumes



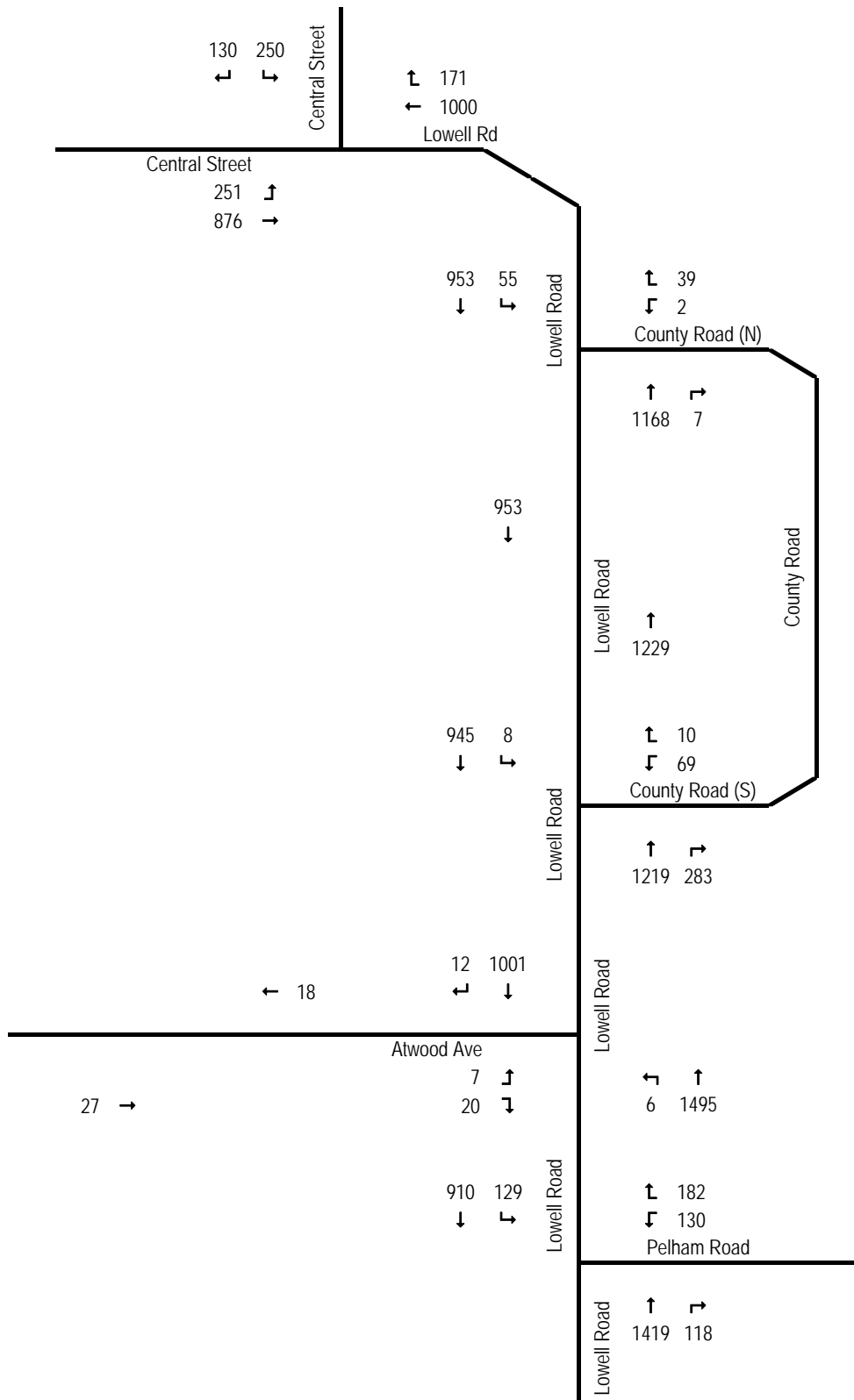
2024 NoBUILD
 PM Peak Hour

XX Volumes



2034 NoBUILD
 PM Peak Hour

XX Volumes



5. Trip Generation:

Proposed Trips

Using standard trip generation rates published by the Institute of Transportation Engineers (ITE 11th Edition), Land Use Code 945 Convenience Store/Gas Station was used to calculate the vehicle trips for the proposed Site Development. Given the location and nearby residential density, the site is likely to be highly convenience goods-oriented as well as fuel-oriented. There is another gas/convenience store about 700' north of the site with only 8 vfp and a convenience store only 1/3 the size as proposed on the Atwood Ave site. Therefore, fuel positions were selected as the appropriate LUC 945 sub-category, with store size (4 – 5.5 ksf) as independent variable. The car wash use is expected to be an accessory to the gas/convenience as it is unlikely many trips will be made primary for a car wash only. Table 1 shows the total trip generation for the proposed development. See Table 2 in section 6 for New Trips. Calculations are attached in the appendix.

Table 1 – Trip Generation (Per ITE 11th)

Land Use 945	In	Out	Total
Proposed 5.4 ksf Convenience Store/Gas Station – GFA (4 - 5.5k): 16 vfp			
Weekday AM Peak Hour Adjacent Street	153	152	305
Weekday PM Peak Hour Adjacent Street	147	147	294

6. Trip Composition, Distribution and Assignment:

Composition

Based on ITE guidance¹, site generated trips can be broken down into three categories: primary trips, pass-by trips, and diverted-linked trips.

A primary trip typically goes from the origin to the generator and then returns to the origin. Pass-by trips are attracted from traffic passing the site on an adjacent roadway; i.e. trips already using Lowell Road. Diverted-Linked trips are attracted from other nearby roadways and require a diversion to access the generator. In this study, there are no diverted links.

For this site, a significant proportion of Pass-By trips would be expected. A new List of Pass-By rates was published with the ITE Trip Generation Manual, 11th Edition. For LUC 945, new rates were published showing 76% pass-by in the AM peak hour and 75% pass-by in the PM peak hour. See the following composition in Table 2.

Table 2: New Trip Composition

	Non Pass-By		Pass-By		Total Trips at Site	New Trips on Road
	In	Out	In	Out		
Weekday AM Peak Hour Adjacent Street	37	36	116	116	305	73
Weekday PM Peak Hour Adjacent Street	37	37	110	110	294	74

Distribution

New trips were distributed through the network using prorata existing travel patterns. Most of the trips are expected to use the main driveway at Lowell Road. However, the secondary

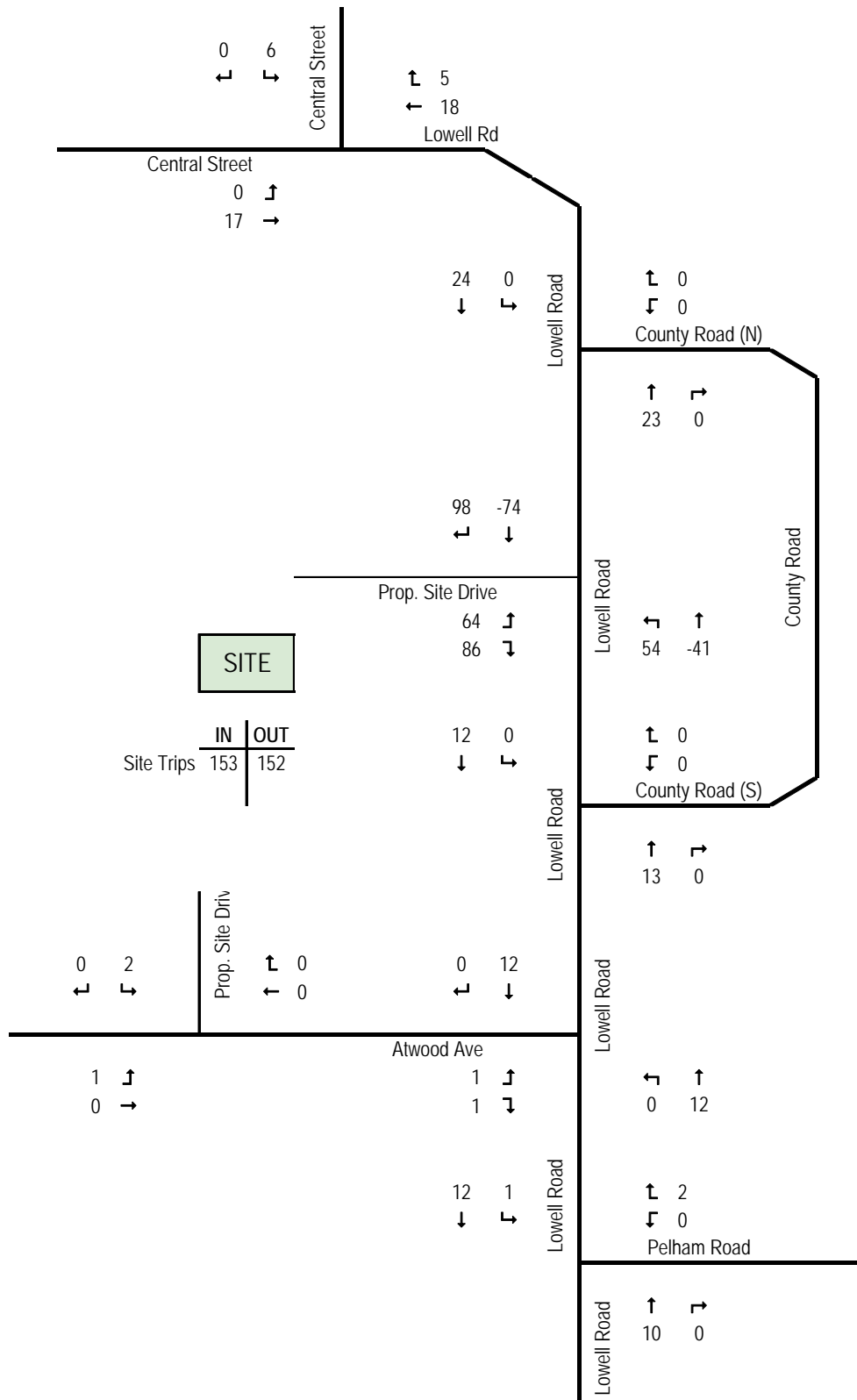
¹ ITE Trip Generation Handbook (3rd edition), Appendix E, September 2017.

access onto Atwood Lane is an option for all vehicles accessing the site. We have calculated several trips using Atwood Ave into the distribution model to allow for some level of analysis of these intersections. Utilization is expected to be low, but some increase in trips will be accounted for.

The trips generated by the proposed development were added to the No-Build volumes throughout the study area to produce the build volumes. Worksheets detailing the distribution of the site-generated trips are included in the appendix. The results of these distribution calculations are shown in the following figures:

SITE TRIPS
 AM Peak Hour

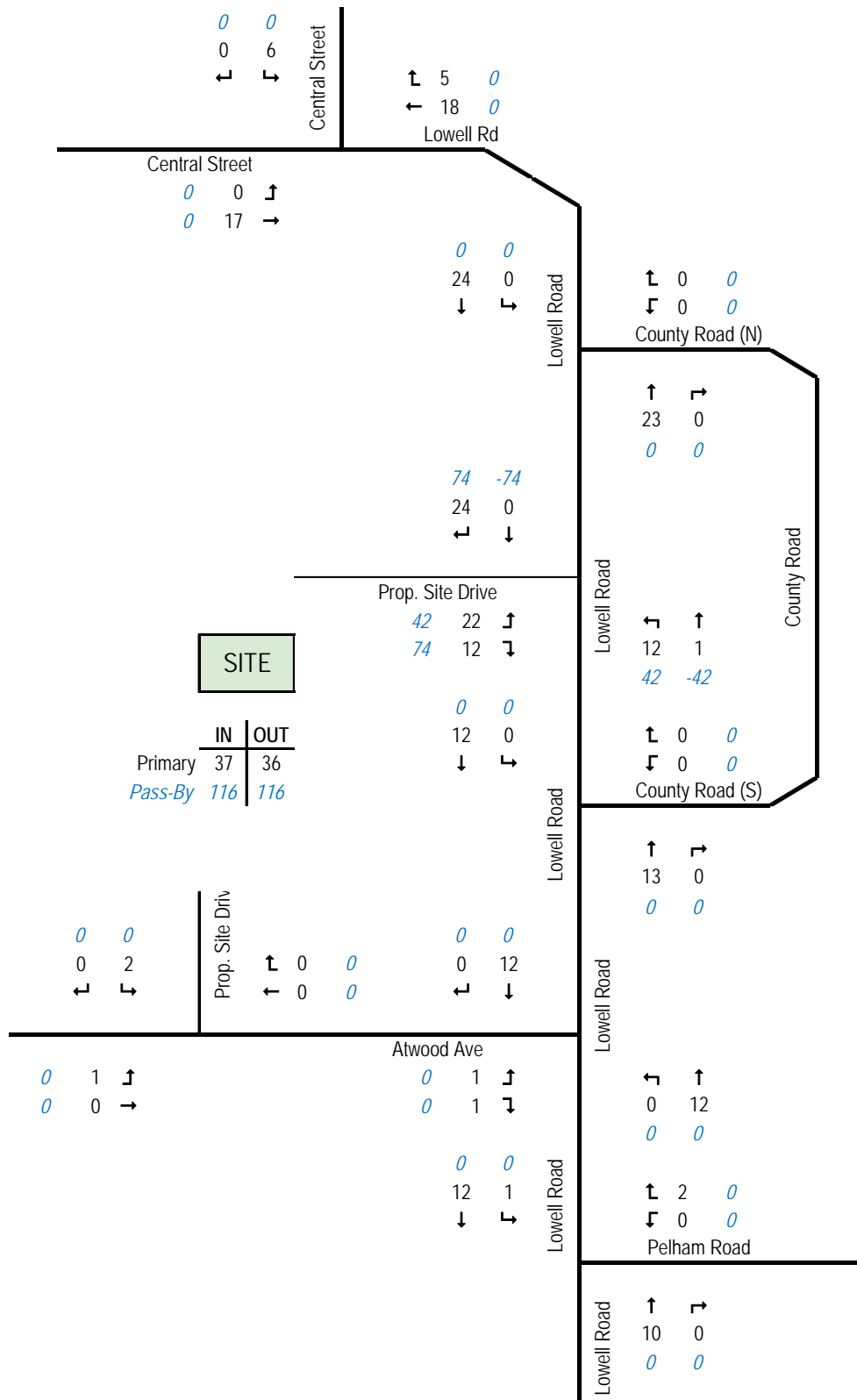
XX Site Trip



	IN	OUT
Site Trips	153	152

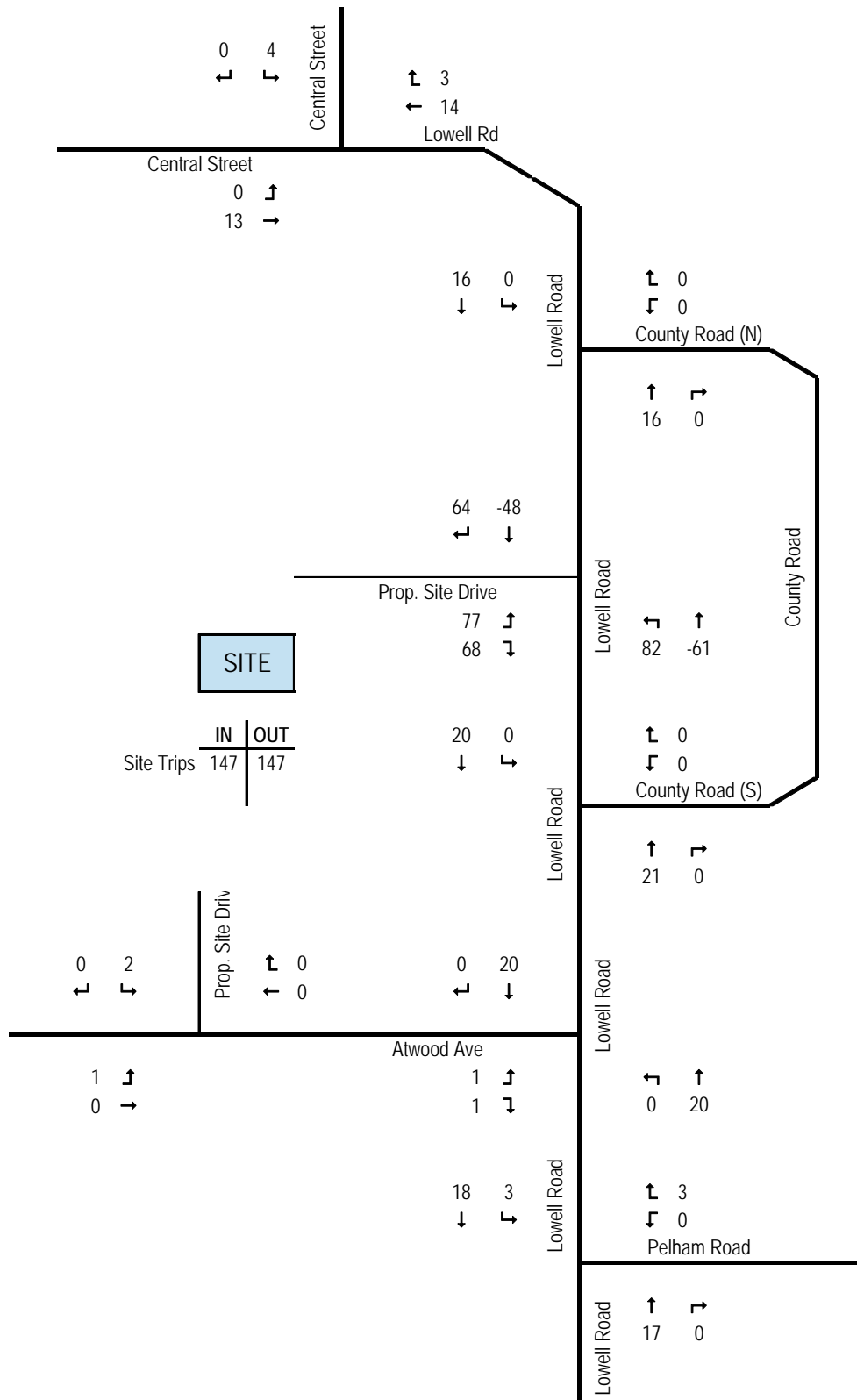
SITE TRIP ASSIGNMENT
 AM Peak Hour

XX Primary Site Trips
 XX Pass-By Site Trips



SITE TRIPS
 PM Peak Hour

XX Site Trip

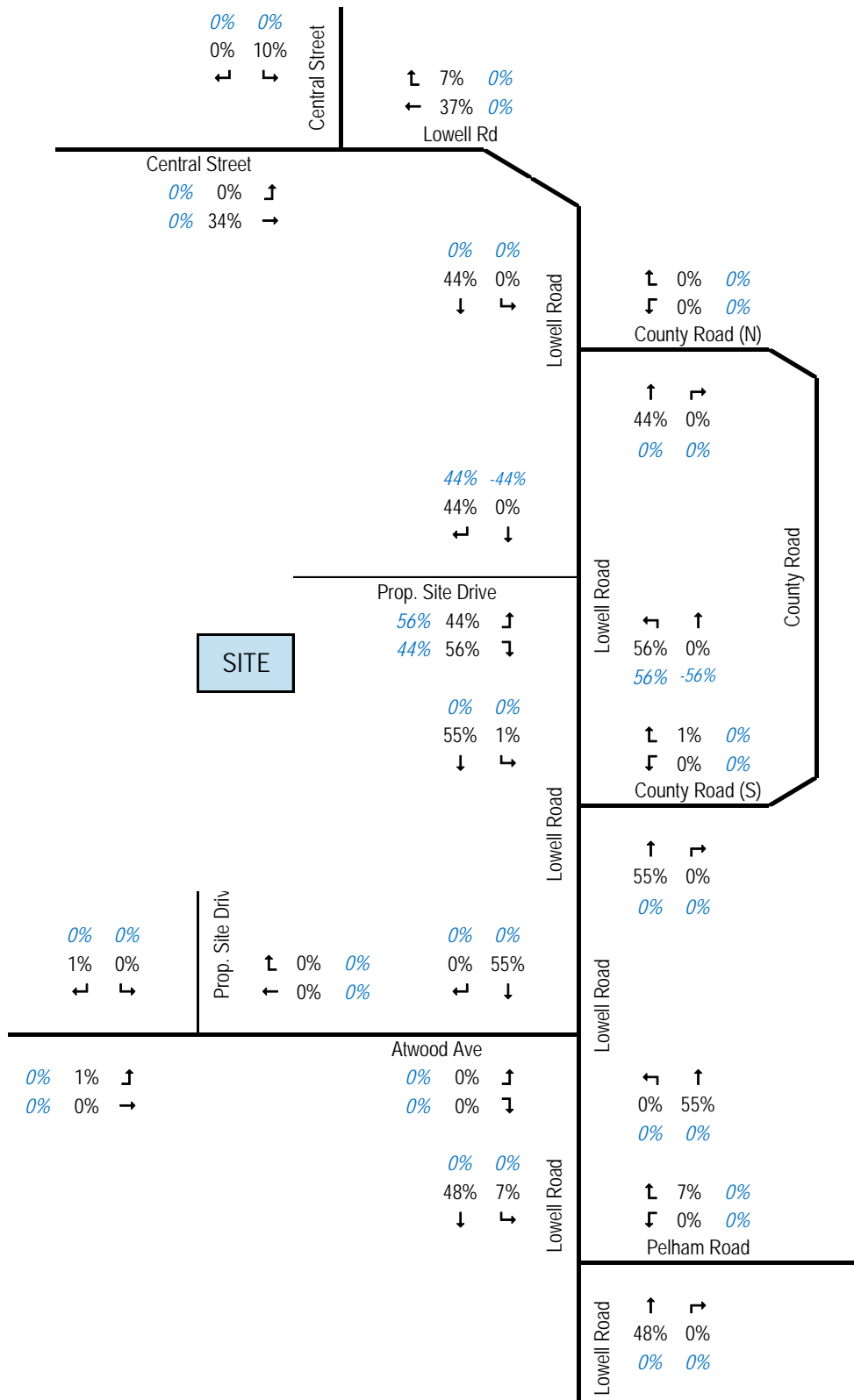


SITE

	IN	OUT
Site Trips	147	147

SITE TRIP DISTRIBUTION
 PM Peak Hour

XX Primary Site Trips
 XX Pass-By Site Trips



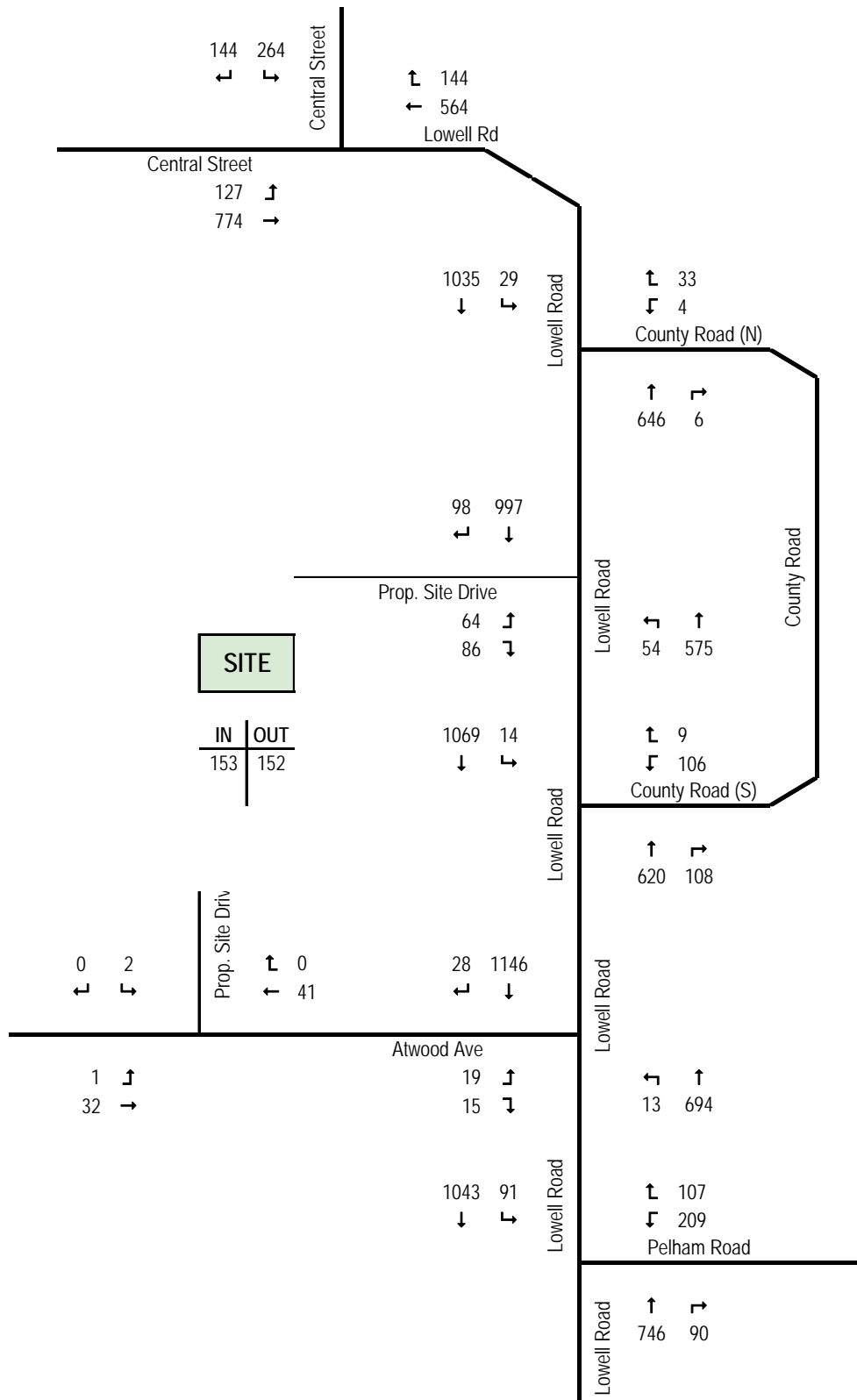
7. Build Volumes:

The site trips generated by the development were added to No-Build traffic volumes throughout the study area to produce Build diagrams for the development.

2024 and 2034 diagrams are shown on the following pages for each peak hour:

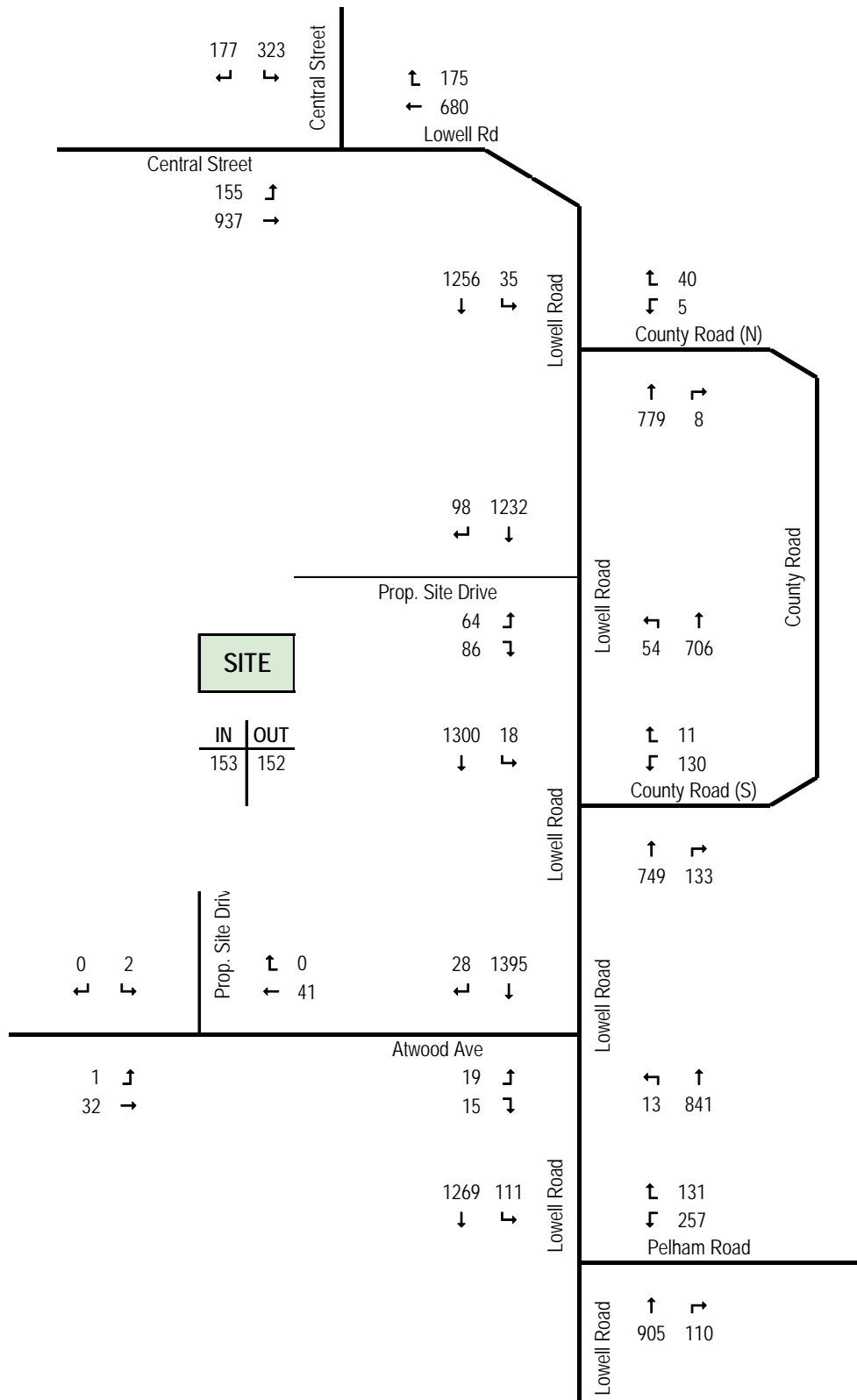
2024 BUILD
 AM Peak Hour

XX Volumes



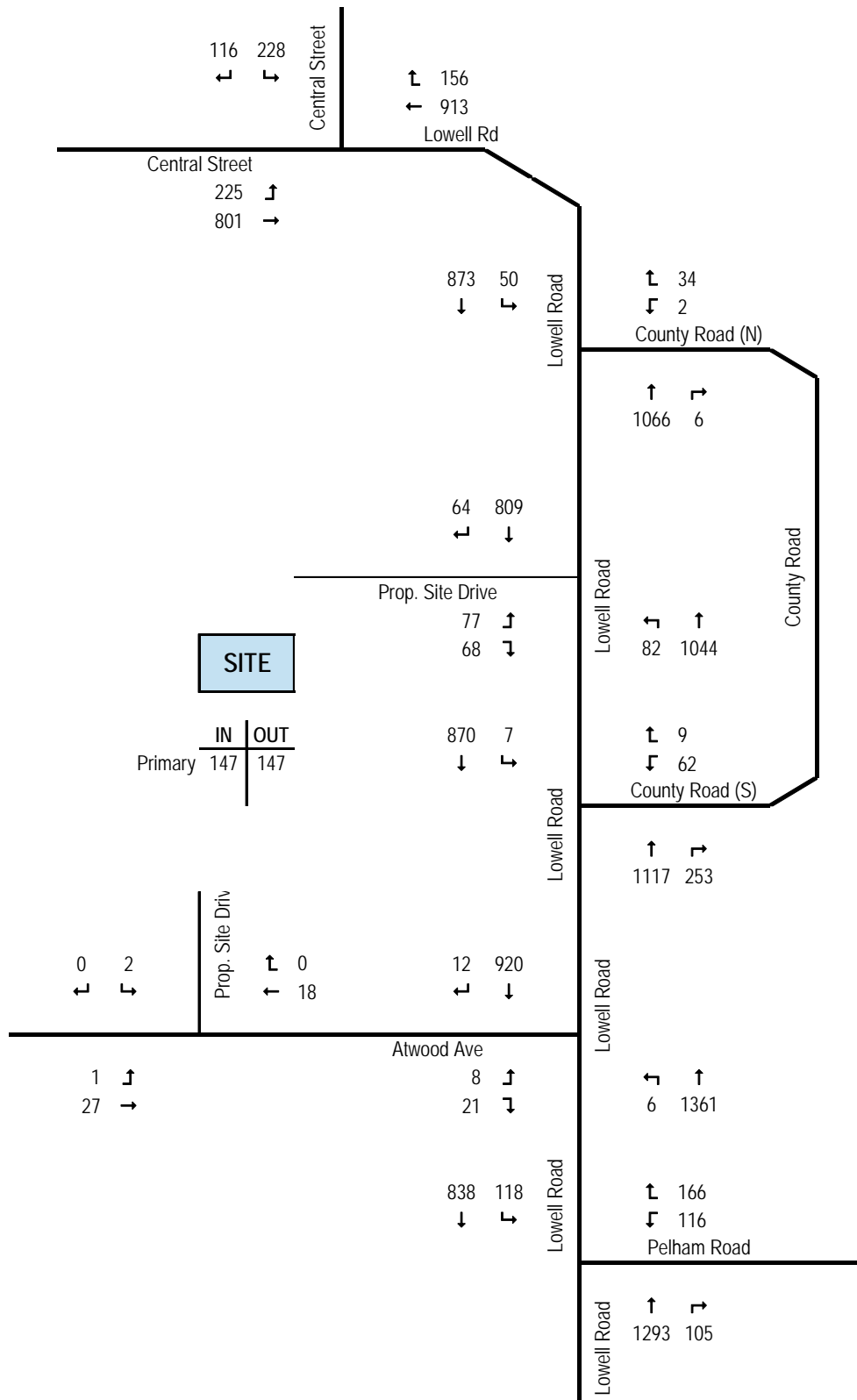
2034 BUILD
 AM Peak Hour

XX Volumes



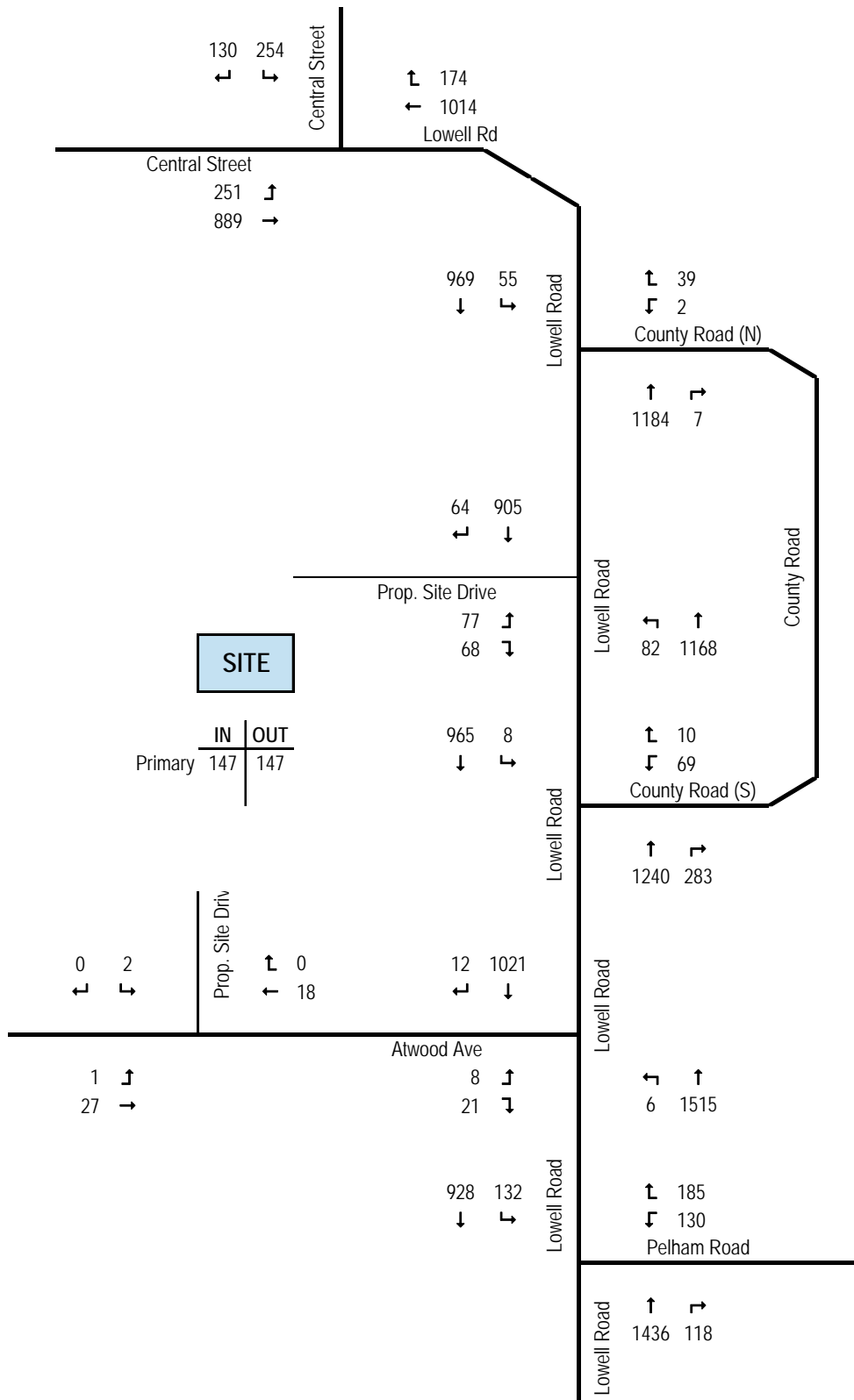
2024 BUILD
 PM Peak Hour

XX Volumes



2034 BUILD
 PM Peak Hour

XX Volumes



8. Level of Service Analysis:

Level of Service Analysis:

Level of service (LOS) is a qualitative description of operational conditions within a traffic stream measured in terms of control delay, a function of capacity, degree of saturation, and delay associated with traffic signals and “STOP” signs. Control delay includes initial deceleration, delay approaching a control device, stopped delay, queue move-up time, and acceleration delay from a stopped condition. The relationship between control delay and LOS is shown in the following table.

Level of Service (LOS)	Signalized Control Delay (sec)	Unsignalized Control Delay (sec)
A	≤10.0	≤10.0
B	10.1 to 20.0	10.1 to 15.0
C	20.1 to 35.0	15.1 to 25.0
D	35.1 to 55.0	25.1 to 35.0
E	55.1 to 80.0	35.1 to 50.0
F	Over 80.0	Over 50.0

Study Area.

Analyses were performed for the study area intersections previously described, that is:

- | | |
|-----------------------------------|--------------------------------|
| 3. Lowell Road at Central Street | 7. Lowell Road at Atwood Ave. |
| 4. Lowell Road at County Road (N) | 8. Atwood Ave at Site Driveway |
| 5. Lowell Road at Site Driveway | 9. Lowell Road at Pelham Road |
| 6. Lowell Road at County Road (S) | |

Queue Analysis.

Vehicle queue lengths are determined by the capacity of the movement under study and the volume of traffic processed by the intersection during the analysis period. It is standard practice to report the 95th percentile queue, that is, the queue that will be exceeded no more than 5% of the time during the peak periods.

Methodology.

Trafficware “Synchro” v11 software was used to analyze signalized and unsignalized intersections (based on HCM 2000) within the study area intersections during the weekday AM and PM peak hours.

Signal Timing.

Signal timings are based on data provided by the Town of Hudson as shown in the table below and provided in the Appendix.

Signal Timing Data Sources

Lowell Road at Central Street	AM/PM	Town GRIDSMART
Lowell Road at County Road (N)	AM/PM	Unsignalized
Lowell Road at County Road (S)	AM/PM	Unsignalized
Lowell Road at Atwood Avenue	AM/PM	Unsignalized
Lowell Road at Pelham Road	AM/PM	Town GRIDSMART

Volume to capacity (v/c) ratios, Level of Service (LOS), delays and queue results are summarized in the following tables:

Table 3. Level of Service Analysis Summary (2023/2024/2034) – AM Peak Hour

Movement	2023 BASE AM				2024 NoBuild AM				2024 Build AM				2034 NoBuild AM				2034 Build AM			
	v/c ^a	Del ^b	LOS ^c	Q ^d	v/c ^a	Del ^b	LOS ^c	Q ^d	v/c ^a	Del ^b	LOS ^c	Q ^d	v/c ^a	Del ^b	LOS ^c	Q ^d	v/c ^a	Del ^b	LOS ^c	Q ^d
3: Lowell Road at Central Street [Signalized]																				
OVERALL	0.74	19.3	B	---	0.78	20.9	C	---	0.80	22.2	C	---	0.93	34.8	C	---	0.96	39.4	D	---
EB L	0.54	34.2	C	147	0.57	37.2	D	150	0.58	38.1	D	150	0.71	47.4	D	180	0.71	48.0	D	180
EB T	0.68	12.3	B	303	0.71	13.1	B	347	0.72	13.3	B	362	0.83	16.8	B	526	0.84	17.4	B	552
WB T	0.69	20.4	C	334	0.72	21.3	C	378	0.73	21.6	C	397	0.81	24.9	C	510	0.83	25.7	C	532
WB R	0.09	3.9	A	11	0.09	3.8	A	11	0.10	3.8	A	12	0.12	3.9	A	17	0.12	3.9	A	18
SBL	0.77	37.1	D	293	0.81	43.0	D	302	0.87	51.0	D	321	1.10	>80	F	406	1.18	>80	F	424
SBR	0.11	15.9	B	22	0.11	17.5	B	22	0.13	18.2	B	28	0.21	21.6	C	56	0.23	22.2	C	61
4: Lowell Road at County Road (N) [Unsignalized]																				
OVERALL	---	0.5	A	---	---	0.5	---	---	---	0.5	A	---	---	0.6	A	---	---	0.6	A	---
WB L/R	0.10	14.5	B	9	0.11	15.3	C	10	0.12	15.7	C	10	0.17	18.7	C	15	0.18	19.3	C	16
NB T/R	0.38	0.0	A	0	0.42	0.0	A	0	0.43	0.0	A	0	0.50	0.0	A	0	0.52	0.0	A	0
SBL	0.03	9.2	A	3	0.04	9.4	A	3	0.04	9.5	A	3	0.05	10.1	B	4	0.05	10.2	B	4
SB T	0.63	0.0	A	0	0.67	0.0	A	0	0.68	0.0	A	0	0.81	0.0	A	0	0.83	0.0	A	0
5: Lowell Road at Proposed Site Drive [Unsignalized]																				
OVERALL	---	---	---	---	---	---	---	---	---	2.6	A	---	---	---	---	---	---	3.4	A	---
EB L/R	---	---	---	---	---	---	---	---	0.40	28.0	D	47	---	---	---	---	0.57	45.5	E	82
NB L	---	---	---	---	---	---	---	---	0.10	11.9	B	9	---	---	---	---	0.13	14.0	B	11
NB T	---	---	---	---	---	---	---	---	0.38	0.0	A	0	---	---	---	---	0.46	0.0	A	0
SB T/R	---	---	---	---	---	---	---	---	0.72	0.0	A	0	---	---	---	---	0.87	0.0	A	0
6: Lowell Road at County Road (S) [Unsignalized]																				
OVERALL	---	2.1	A	---	---	2.3	A	---	---	2.4	A	---	---	6.5	A	---	---	6.7	A	---
WB L/R	0.49	31.5	D	63	0.54	36.8	E	74	0.55	38.0	E	76	0.92	>50	F	174	0.94	>50	F	179
NB T/R	0.43	0.0	A	0	0.46	0.0	A	0	0.47	0.0	A	0	0.56	0.0	A	0	0.56	0.0	A	0
SBL	0.02	9.7	A	2	0.02	10.1	B	2	0.02	10.2	B	2	0.04	11.7	B	3	0.04	11.8	B	3
SB T	0.67	0.0	A	0	0.71	0.0	A	0	0.71	0.0	A	0	0.86	0.0	A	0	0.87	0.0	A	0

^a Volume-to-capacity ratio - ^b Average control delay (sec/veh) - ^c Level of service - ^d 95th percentile queue in feet

Table 3 cont. Level of Service Analysis Summary (2023/2024/2034) – AM Peak Hour

Movement	2023 BASE AM				2024 NoBuild AM				2024 Build AM				2034 NoBuild AM				2034 Build AM				
	v/c ^a	Del ^b	LOS ^c	Q ^d	v/c ^a	Del ^b	LOS ^c	Q ^d	v/c ^a	Del ^b	LOS ^c	Q ^d	v/c ^a	Del ^b	LOS ^c	Q ^d	v/c ^a	Del ^b	LOS ^c	Q ^d	
7: Atwood Avenue at Proposed Site Driveway [Unsignalized]																					
OVERALL	---	---	---	---	---	---	---	---	---	0.3	A	---	---	---	---	---	---	0.3	A	---	
EB L/T	---	---	---	---	---	---	---	---	---	0.00	A	0	---	---	---	---	---	0.00	0.2	A	0
WB T/R	---	---	---	---	---	---	---	---	---	0.03	A	0	---	---	---	---	---	0.03	0.0	A	0
SB L/R	---	---	---	---	---	---	---	---	---	0.00	A	0	---	---	---	---	---	0.00	8.9	A	0
8: Lowell Road at Atwood Avenue [Unsignalized]																					
OVERALL	---	0.6	A	---	---	0.6	A	---	---	0.7	A	---	---	0.7	A	---	---	0.7	0.8	A	---
EB L/R	0.19	24.4	C	17	0.21	26.7	D	19	0.22	27.5	D	20	0.29	39.5	E	29	0.31	41.1	E	31	
NB L	0.02	11.5	B	2	0.02	12.0	B	2	0.02	12.0	B	2	0.03	14.0	B	2	0.03	14.1	B	2	
NB T	0.38	0.0	A	0	0.41	0.0	A	0	0.42	0.0	A	0	0.50	0.0	A	0	0.51	0.0	A	0	
SB T/R	0.74	0.0	A	0	0.78	0.0	A	0	0.78	0.0	A	0	0.94	0.0	A	0	0.95	0.0	A	0	
9: Lowell Road at Pelham Road [Signalized]																					
OVERALL	0.77	23.7	C	---	0.82	25.3	C	---	0.82	25.0	C	---	1.01	47.8	D	---	1.02	49.3	D	---	
WB L	0.80	69.8	E	292	0.80	70.1	E	296	0.81	71.7	E	296	0.90	>80	F	415	0.90	>80	F	415	
WB R	0.10	35.0	C	69	0.10	34.6	C	71	0.11	36.4	D	72	0.17	40.5	D	98	0.17	40.5	D	100	
NB T/R	0.73	21.2	C	567	0.79	24.1	C	647	0.77	22.0	C	663	0.88	26.9	C	1041	0.89	27.9	C	1089	
SB L	0.49	58.9	E	236	0.49	58.7	E	240	0.57	62.9	E	244	1.40	>80	F	293	1.41	>80	F	295	
SB T	0.74	11.5	B	686	0.79	13.4	B	806	0.80	13.5	B	837	0.98	35.7	D	1574	0.99	38.1	D	1598	

^a Volume-to-capacity ratio - ^b Average control delay (sec/wht) - ^c Level of service - ^d 95th percentile queue in feet

Table 4. Level of Service Analysis Summary (2023/2024/2034) – PM Peak Hour

Movement	2023 BASE PM				2024 NoBuild PM				2024 Build PM				2034 NoBuild PM				2034 Build PM				
	v/c ^a	Del ^b	LOS ^c	Q ^d	v/c ^a	Del ^b	LOS ^c	Q ^d	v/c ^a	Del ^b	LOS ^c	Q ^d	v/c ^a	Del ^b	LOS ^c	Q ^d	v/c ^a	Del ^b	LOS ^c	Q ^d	
3: Lowell Road at Central Street [Signalized]																					
OVERALL	0.89	29.6	C	---	0.95	37.8	D	---	0.96	40.7	D	---	1.05	58.3	E	---	1.07	62.4	E	---	
EB L	0.88	67.2	E	305	0.90	72.5	E	310	0.90	72.7	E	310	1.00	>80	F	357	1.01	>80	F	357	
EB T	0.58	8.4	A	312	0.63	9.2	A	365	0.64	9.6	A	377	0.70	11.1	B	454	0.71	11.6	B	470	
WB T	0.94	38.4	D	823	1.02	57.8	E	942	1.04	64.4	E	965	1.15	>80	F	1103	1.17	>80	F	1129	
WB R	0.11	4.1	A	20	0.11	4.1	A	22	0.12	4.2	A	22	0.13	4.2	A	26	0.13	4.2	A	27	
SBL	0.76	48.3	D	243	0.77	50.0	D	250	0.79	52.6	D	271	0.83	55.9	E	302	0.86	60.5	E	320	
SBR	0.10	22.9	C	47	0.13	23.5	C	58	0.14	23.4	C	60	0.18	23.7	C	78	0.19	23.7	C	80	
4: Lowell Road at County Road (N) [Unsignalized]																					
OVERALL	---	0.8	A	---	---	0.8	A	---	---	0.8	A	---	---	1.0	A	---	---	1.0	A	---	
WB L/R	0.18	20.2	C	16	0.20	22.3	C	18	0.20	22.8	C	19	0.27	27.4	D	27	0.28	28.1	D	27	
NB T/R	0.60	0.0	A	0	0.65	0.0	A	0	0.66	0.0	A	0	0.72	0.0	A	0	0.73	0.0	A	0	
SBL	0.08	10.7	B	6	0.08	11.1	B	7	0.08	11.2	B	7	0.10	12.0	B	9	0.10	12.1	B	9	
SB T	0.50	0.0	A	0	0.54	0.0	A	0	0.55	0.0	A	0	0.60	0.0	A	0	0.61	0.0	A	0	
5: Lowell Road at Proposed Site Drive [Unsignalized]																					
OVERALL	---	---	---	---	---	---	---	---	---	2.5	A	---	---	---	---	---	---	2.7	A	---	
EB L/R	---	---	---	---	---	---	---	---	0.47	30.6	D	59	---	---	---	---	0.50	35.0	D	67	
NB L	---	---	---	---	---	---	---	---	0.13	10.7	B	11	---	---	---	---	0.14	11.5	B	12	
NB T	---	---	---	---	---	---	---	---	0.68	0.0	A	0	---	---	---	---	0.70	0.0	A	0	
SB T/R	---	---	---	---	---	---	---	---	0.57	0.0	A	0	---	---	---	---	0.63	0.0	A	0	
6: Lowell Road at County Road (S) [Unsignalized]																					
OVERALL	---	2.2	A	---	---	3.6	A	---	---	4.1	A	---	---	11.6	B	---	---	13.2	A	---	
WB L/R	0.57	>50	F	73	0.76	>50	F	106	0.81	>50	F	115	1.35	>50	F	195	1.45	>50	F	205	
NB T/R	0.79	0.0	A	0	0.84	0.0	A	0	0.86	0.0	A	0	0.94	0.0	A	0	0.95	0.0	A	0	
SBL	0.04	21.6	C	3	0.05	26.5	D	4	0.05	27.9	D	4	0.08	39.7	E	6	0.08	42.0	E	7	
SB T	0.50	0.0	A	0	0.54	0.0	A	0	0.56	0.0	A	0	0.60	0.0	A	0	0.62	0.0	A	0	

^a Volume-to-capacity ratio - ^b Average control delay (sec/veh) - ^c Level of service - ^d 95th percentile queue in feet

Table 4 cont. Level of Service Analysis Summary (2023/2024/2034) – PM Peak Hour

Movement	2023 BASE PM				2024 NoBuild PM				2024 Build PM				2034 NoBuild PM				2034 Build PM				
	v/c ^a	Del ^b	LOS ^c	Q ^d	v/c ^a	Del ^b	LOS ^c	Q ^d	v/c ^a	Del ^b	LOS ^c	Q ^d	v/c ^a	Del ^b	LOS ^c	Q ^d	v/c ^a	Del ^b	LOS ^c	Q ^d	
7: Atwood Avenue at Proposed Site Driveway [Unsignalized]																					
OVERALL	---	---	---	---	---	---	---	---	---	0.5	A	---	---	---	---	---	---	0.5	A	---	
EB L/T	---	---	---	---	---	---	---	---	---	0.0	A	0	---	---	---	---	---	0.0	0.2	A	0
WB T/R	---	---	---	---	---	---	---	---	---	0.01	A	0	---	---	---	---	---	0.01	0.0	A	0
SB L/R	---	---	---	---	---	---	---	---	---	0.00	A	0	---	---	---	---	---	0.00	8.8	A	0
8: Lowell Road at Atwood Avenue [Unsignalized]																					
OVERALL	---	0.7	A	---	---	0.8	A	---	---	0.9	A	---	---	1.2	A	---	---	1.6	A	---	
EB L/R	0.25	29.4	D	24	0.31	37.4	E	31	0.37	43.2	E	39	0.48	>50	F	53	0.57	>50	F	66	
NB L	0.01	9.9	A	1	0.01	10.2	B	1	0.01	10.3	B	1	0.01	10.7	B	1	0.01	10.8	B	1	
NB T	0.81	0.0	A	0	0.86	0.0	A	0	0.87	0.0	A	0	0.96	0.0	A	0	0.97	0.0	A	0	
SB T/R	0.55	0.0	A	0	0.59	0.0	A	0	0.60	0.0	A	0	0.65	0.0	A	0	0.67	0.0	A	0	
9: Lowell Road at Pelham Road [Signalized]																					
OVERALL	1.01	61.5	E	---	1.07	76.8	E	---	1.08	>80	F	---	1.19	>80	F	---	1.20	>80	F	---	
WB L	0.63	63.9	E	176	0.64	63.9	E	178	0.64	63.9	E	178	0.66	64.2	E	193	0.66	64.2	E	193	
WB R	0.25	41.4	D	139	0.28	41.8	D	152	0.29	41.9	D	158	0.36	42.7	D	192	0.37	42.9	D	197	
NB T/R	1.14	96.3	F	1810	1.21	>80	F	1979	1.23	>80	F	2016	1.35	>80	F	2309	1.36	>80	F	2345	
SB L	0.63	63.5	E	254	0.64	64.1	E	257	0.65	65.1	E	263	0.77	77.6	E	311	0.79	>80	F	319	
SB T	0.54	5.1	A	338	0.59	5.7	A	397	0.60	5.9	A	415	0.66	7.3	A	528	0.68	7.5	A	554	

^a Volume-to-capacity ratio - ^b Average control delay (sec/web) - ^c Level of service - ^d 95th percentile queue in feet

9. Sight Distance:

The proposed driveways have adequate sight distance based on grade and distance to adjacent intersections. The site driveway on Lowell Road provides more than 300' of view of oncoming traffic in both directions. Atwood Avenue is a dead-end roadway and vehicles will have view of the entire roadway from the driveway.

10. Accident Evaluation:

Crash data requested for the study intersections was received from the Hudson Police Department from January 1, 2020 to July 25, 2023 and is provided in the Appendix. A summary of the crash data is provided below in Table 4.

Table 5 – Crash Data Summary

	Lowell Road at Central St (Signalized)	Lowell Road at County Rd (N&S) (Unsignalized)	Lowell Road at Atwood Ave (Unsignalized)	Lowel Road at Pelham Rd (Signalized)
CRASH FREQUENCY				
Total Crashes	11	22	4	14
Crashes / Year (Ave)	3.1	3.1	1.2	4.0
CRASH SEVERITY				
Property Damage Only	1	7	2	0
Injury	4	8	0	1
Fatalities	0	0	0	0
CRASH TYPE				
Vehicle vs Vehicle	11	21	4	14
Vehicle vs Bicyclist	0	1	0	0
ADVERSE CONDITIONS				
Dry	10	19	3	12
Wet	1	1	1	2
Snow	0	1	0	0
Slush	0	1	0	0

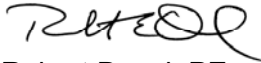
11. Conclusion:

This study shows that traffic from this development proposal is primarily composed of pass-by trips and adds approximately one new trip per minute during peak hours. Therefore, only minor impacts are caused to study area intersections.

- Delays and queues along Lowell Road are essentially unchanged (overall LOS D or better, one car or less added to queues) in all scenarios.
- Both proposed site driveways function acceptably in all scenarios.
- Failing left turns at intersections along Lowell Road are due to existing volumes, not impacts from this project.
- Adding one new trip per minute to corridor intersections results in added queue lengths of one car or less for all movements.

We therefore conclude that the site driveways will operate acceptably, and this proposal will have no significant negative impacts on the Lowell Road and adjacent roadways.

Respectfully Submitted,
TFMORAN, INC.



Robert Duval, PE
Chief Engineer

APPENDIX A

Proposed Trip Generation		Proposed Trip Composition	
Based on ITE Trip Generation 11th Edition		Based on ITE Trip Generation 11th Edition	

RETAIL																	
ITE LUC 945 - Convenience Store/Gas Station [VFP (9-15)]: 5,400 sf, 12 vfp																	
Time Period	X	X Variable: sf	Rate/ Eq Used	Trip Ends	Directional Split		Directional Distribution		Trips			Pass-By					
					In	Out	In	Out	IN	OUT	% In	% Out	# In	# Out	% In	% Out	# Out
Weekday AM Peak Hour of the Generator	5.4	56.52	Rate	305	50%	50%	153	152	153	152	24%	24%	37	36	76%	76%	116
Weekday PM Peak Hour Adjacent Street	5.4	54.52	Rate	294	50%	50%	147	147	147	147	25%	25%	37	37	75%	75%	110
Weekday Daily	5.4	700.43	Rate	3782	50%	50%	1891	1891	1891	1891							

Vehicle Pass-By Rates by Land Use, Source: ITE Trip Generation Manual, 11th Edition
LUC 945, Convenience Store/Gas Station, Weekday AM & PM Peak Periods, 28 Sites with between 9 and

DESCRIPTION OF LUC 945:

A convenience store/gas station is a facility with a co-located convenience store and gas station. The convenience store sells grocery and other everyday items that a person may need or want as a matter of convenience. The gas station sells automotive fuels such as gasoline and diesel. A convenience store/gas station is typically located along a major thoroughfare to optimize motorist convenience. Extended hours of operation (with many open 24 hours, 7 days a week) are common at these facilities. The convenience store product mix typically includes pre-packaged grocery items, beverages, dairy products, snack foods, confectionary, tobacco products, over-the-counter drugs, and toiletries. A convenience store may sell alcohol, often limited to beer and wine. Coffee and pre-made sandwiches are also commonly sold at a convenience store. Made-to-order food orders are sometimes offered. Some stores offer limited seating. The sites in this land use include both self-pump and attendant-pumped fueling positions and both pre-pay and post-pay operations.

APPENDIX B

RETAIL: Convenience Store / Gas Station with Car Wash									
% ProRata Primary				% ProRata Pass-By					
Primary				Pass-By					
		In	Out			In	Out		
AM Totals		37	36	AM Totals		116	116		
3: Lowell Road at Central Street				3: Lowell Road at Central Street					
		PERCENTAGES				PERCENTAGES			
		TRIPS				TRIPS			
Movement	In	Out	In	Out	Movement	In	Out		
EBL			0	0	EBL		0	0	
EBT	47%		17	0	EBT		0	0	
WBT		50%	0	18	WBT		0	0	
WBR		13%	0	5	WBR		0	0	
SBL	17%		6	0	SBL		0	0	
SBR			0	0	SBR		0	0	
4: Lowell Road at County Road (N)				4: Lowell Road at County Road (N)					
		PERCENTAGES				PERCENTAGES			
		TRIPS				TRIPS			
Movement	In	Out	In	Out	Movement	In	Out		
WBL			0	0	EBL		0	0	
WBR			0	0	WBL		0	0	
NBT		63%	0	23	WBR		0	0	
NBR		1%	0	0	NBT		0	0	
SBL			0	0	NBR		0	0	
SBT	64%		24	0	SBL		0	0	
5: Lowell Road at Prop. Site Drive				5: Lowell Road at Prop. Site Drive					
		PERCENTAGES				PERCENTAGES			
		TRIPS				TRIPS			
Movement	In	Out	In	Out	Movement	In	Out		
EBL		64%	0	22	EBL		36%	0	42
EBR		36%	0	12	EBR		64%	0	74
NBL	36%		12	0	NBL	36%		42	0
NBT			0	1	NBT	-36%		-42	0
SBT			0	0	SBT	-64%		-74	0
SBR	64%		24	0	SBR	64%		74	0

RETAIL: Convenience Store / Gas Station with Car Wash									
% ProRata Primary				% ProRata Pass-By					
		In	Out			In	Out		
		AM Totals	37	36			AM Totals	116	116
6: Lowell Road at County Road (S)				6: Lowell Road at County Road (S)					
		PERCENTAGES		TRIPS		PERCENTAGES		TRIPS	
<u>Movement</u>	<u>In</u>	<u>Out</u>	<u>In</u>	<u>Out</u>	<u>Movement</u>	<u>In</u>	<u>Out</u>	<u>In</u>	<u>Out</u>
WBL			0	0	WBL			0	0
WBR	1%		0	0	WBR			0	0
NBT	35%		12	1	NBT			0	0
NBR			0	0	NBR			0	0
SBL		0%	0	0	SBL			0	0
SBT		36%	0	12	SBT			0	0
7: Atwood Lane at Prop. Site Drive				7: Atwood Lane at Prop. Site Drive					
		PERCENTAGES		TRIPS		PERCENTAGES		TRIPS	
<u>Movement</u>	<u>In</u>	<u>Out</u>	<u>In</u>	<u>Out</u>	<u>Movement</u>	<u>In</u>	<u>Out</u>	<u>In</u>	<u>Out</u>
EBL			1	0	EBL			0	0
EBT			0	0	EBT			0	0
WBT			0	0	WBT			0	0
WBR			0	0	WBR			0	0
SBL			0	2	SBL			0	0
SBR			0	0	SBR			0	0
8: Lowell Road at Atwood Ave				8: Lowell Road at Atwood Ave					
		PERCENTAGES		TRIPS		PERCENTAGES		TRIPS	
<u>Movement</u>	<u>In</u>	<u>Out</u>	<u>In</u>	<u>Out</u>	<u>Movement</u>	<u>In</u>	<u>Out</u>	<u>In</u>	<u>Out</u>
EBL			0	1	EBL			0	0
EBR			0	1	EBR			0	0
NBL			0	0	NBL			0	0
NBT	35%		12	0	NBT			0	0
SBT		36%	0	12	SBT			0	0
SBR			0	0	SBR			0	0
9: Lowell Road at Pelham Road				9: Lowell Road at Pelham Road					
		PERCENTAGES		TRIPS		PERCENTAGES		TRIPS	
<u>Movement</u>	<u>In</u>	<u>Out</u>	<u>In</u>	<u>Out</u>	<u>Movement</u>	<u>In</u>	<u>Out</u>	<u>In</u>	<u>Out</u>
WBL			0	0	WBL			0	0
WBR	5%		2	0	WBR			0	0
NBT	30%		10	0	NBT			0	0
NBR			0	0	NBR			0	0
SBL		3%	0	1	SBL			0	0
SBT		33%	0	12	SBT			0	0

TOTAL PRIMARY		TOTAL PASS-BY		TOTAL	
TOTAL		TOTAL		TOTAL	
AM PRIMARY		AM PASS-BY		AM TOTAL	
73		232		305	
3: Lowell Road at Central Street		3: Lowell Road at Central Street		3: Lowell Road at Central Street	
<u>Movement</u>		<u>Movement</u>		<u>Movement</u>	
EBL	0	EBL	0	EBL	0
EBT	17	EBT	0	EBT	17
WBT	18	WBT	0	WBT	18
WBR	5	WBR	0	WBR	5
SBL	6	SBL	0	SBL	6
SBR	0	SBR	0	SBR	0
4: Lowell Road at County Road (N)		4: Lowell Road at County Road (N)		4: Lowell Road at County Road (N)	
<u>Movement</u>		<u>Movement</u>		<u>Movement</u>	
WBL	0	WBL	0	WBL	0
WBR	0	WBR	0	WBR	0
NBT	23	NBT	0	NBT	23
NBR	0	NBR	0	NBR	0
SBL	0	SBL	0	SBL	0
SBT	24	SBT	0	SBT	24
5: Lowell Road at Prop. Site Drive		5: Lowell Road at Prop. Site Drive		5: Lowell Road at Prop. Site Drive	
<u>Movement</u>		<u>Movement</u>		<u>Movement</u>	
EBL	22	EBL	42	EBL	64
EBR	12	EBR	74	EBR	86
NBL	12	NBL	42	NBL	54
NBT	1	NBT	-42	NBT	-41
SBT	0	SBT	-74	SBT	-74
SBR	24	SBR	74	SBR	98

TOTAL PRIMARY		TOTAL PASS-BY		TOTAL	
TOTAL		TOTAL		TOTAL	
AM PRIMARY		AM PASS-BY		AM TOTAL	
73		232		305	
6: Lowell Road at County Road (S)		6: Lowell Road at County Road (S)		6: Lowell Road at County Road (S)	
<u>Movement</u>		<u>Movement</u>		<u>Movement</u>	
WBL	0	WBL	0	WBL	0
WBR	0	WBR	0	WBR	0
NBT	13	NBT	0	NBT	13
NBR	0	NBR	0	NBR	0
SBL	0	SBL	0	SBL	0
SBT	12	SBT	0	SBT	12
7: Atwood Lane at Prop. Site Drive		7: Atwood Lane at Prop. Site Drive		7: Atwood Lane at Prop. Site Drive	
<u>Movement</u>		<u>Movement</u>		<u>Movement</u>	
EBL	1	EBL	0	EBL	1
EBT	0	EBT	0	EBT	0
WBT	0	WBT	0	WBT	0
WBR	0	WBR	0	WBR	0
SBL	2	SBL	0	SBL	2
SBR	0	SBR	0	SBR	0
8: Lowell Road at Atwood Ave		8: Lowell Road at Atwood Ave		8: Lowell Road at Atwood Ave	
<u>Movement</u>		<u>Movement</u>		<u>Movement</u>	
EBL	1	EBL	0	EBL	1
EBR	1	EBR	0	EBR	1
NBL	0	NBL	0	NBL	0
NBT	12	NBT	0	NBT	12
SBT	12	SBT	0	SBT	12
SBR	0	SBR	0	SBR	0
9: Lowell Road at Pelham Road		9: Lowell Road at Pelham Road		9: Lowell Road at Pelham Road	
<u>Movement</u>		<u>Movement</u>		<u>Movement</u>	
WBL	0	WBL	0	WBL	0
WBR	2	WBR	0	WBR	2
NBT	10	NBT	0	NBT	10
NBR	0	NBR	0	NBR	0
SBL	1	SBL	0	SBL	1
SBT	12	SBT	0	SBT	12

RETAIL: Convenience Store / Gas Station with Car Wash							
% ProRata Primary				% ProRata Pass-By			
Primary				Pass-By			
		In	Out			In	Out
PM Totals		37	37	PM Totals		110	110
3: Lowell Road at Central Street				3: Lowell Road at Central Street			
		PERCENTAGES				PERCENTAGES	
		TRIPS				TRIPS	
Movement	In	Out	In	Out	Movement	In	Out
EBL			0	0	EBL		0
EBT	34%		13	0	EBT		0
WBT		37%	0	14	WBT		0
WBR		7%	0	3	WBR		0
SBL	10%		4	0	SBL		0
SBR			0	0	SBR		0
4: Lowell Road at County Road (N)				4: Lowell Road at County Road (N)			
		PERCENTAGES				PERCENTAGES	
		TRIPS				TRIPS	
Movement	In	Out	In	Out	Movement	In	Out
WBL			0	0	EBL		0
WBR			0	0	WBL		0
NBT		44%	0	16	WBR		0
NBR		0%	0	0	NBT		0
SBL			0	0	NBR		0
SBT	44%		16	0	SBL		0
5: Lowell Road at Prop. Site Drive				5: Lowell Road at Prop. Site Drive			
		PERCENTAGES				PERCENTAGES	
		TRIPS				TRIPS	
Movement	In	Out	In	Out	Movement	In	Out
EBL		44%	0	15	EBL		56%
EBR		56%	0	20	EBR		44%
NBL	56%		20	0	NBL	56%	62
NBT			0	1	NBT	-56%	-62
SBT			0	0	SBT	-44%	-48
SBR	44%		16	0	SBR	44%	48

TOTAL PRIMARY		TOTAL PASS-BY		TOTAL	
TOTAL		TOTAL		TOTAL	
PM PRIMARY		PM PASS-BY		PM TOTAL	
74		220		294	
3: Lowell Road at Central Street		3: Lowell Road at Central Street		3: Lowell Road at Central Street	
<u>Movement</u>		<u>Movement</u>		<u>Movement</u>	
EBL	0	EBL	0	EBL	0
EBT	13	EBT	0	EBT	13
WBT	14	WBT	0	WBT	14
WBR	3	WBR	0	WBR	3
SBL	4	SBL	0	SBL	4
SBR	0	SBR	0	SBR	0
4: Lowell Road at County Road (N)		4: Lowell Road at County Road (N)		4: Lowell Road at County Road (N)	
<u>Movement</u>		<u>Movement</u>		<u>Movement</u>	
WBL	0	WBL	0	WBL	0
WBR	0	WBR	0	WBR	0
NBT	16	NBT	0	NBT	16
NBR	0	NBR	0	NBR	0
SBL	0	SBL	0	SBL	0
SBT	16	SBT	0	SBT	16
5: Lowell Road at Prop. Site Drive		5: Lowell Road at Prop. Site Drive		5: Lowell Road at Prop. Site Drive	
<u>Movement</u>		<u>Movement</u>		<u>Movement</u>	
EBL	15	EBL	62	EBL	77
EBR	20	EBR	48	EBR	68
NBL	20	NBL	62	NBL	82
NBT	1	NBT	-62	NBT	-61
SBT	0	SBT	-48	SBT	-48
SBR	16	SBR	48	SBR	64

TOTAL PRIMARY		TOTAL PASS-BY		TOTAL	
TOTAL		TOTAL		TOTAL	
PM PRIMARY		PM PASS-BY		PM TOTAL	
74		220		294	
6: Lowell Road at County Road (S)		6: Lowell Road at County Road (S)		6: Lowell Road at County Road (S)	
<u>Movement</u>		<u>Movement</u>		<u>Movement</u>	
WBL	0	WBL	0	WBL	0
WBR	0	WBR	0	WBR	0
NBT	21	NBT	0	NBT	21
NBR	0	NBR	0	NBR	0
SBL	0	SBL	0	SBL	0
SBT	20	SBT	0	SBT	20
7: Atwood Lane at Prop. Site Drive		7: Atwood Lane at Prop. Site Drive		7: Atwood Lane at Prop. Site Drive	
<u>Movement</u>		<u>Movement</u>		<u>Movement</u>	
EBL	1	EBL	0	EBL	1
EBT	0	EBT	0	EBT	0
WBT	0	WBT	0	WBT	0
WBR	0	WBR	0	WBR	0
SBL	2	SBL	0	SBL	2
SBR	0	SBR	0	SBR	0
8: Lowell Road at Atwood Ave		8: Lowell Road at Atwood Ave		8: Lowell Road at Atwood Ave	
<u>Movement</u>		<u>Movement</u>		<u>Movement</u>	
EBL	1	EBL	0	EBL	1
EBR	1	EBR	0	EBR	1
NBL	0	NBL	0	NBL	0
NBT	20	NBT	0	NBT	20
SBT	20	SBT	0	SBT	20
SBR	0	SBR	0	SBR	0
9: Lowell Road at Pelham Road		9: Lowell Road at Pelham Road		9: Lowell Road at Pelham Road	
<u>Movement</u>		<u>Movement</u>		<u>Movement</u>	
WBL	0	WBL	0	WBL	0
WBR	3	WBR	0	WBR	3
NBT	17	NBT	0	NBT	17
NBR	0	NBR	0	NBR	0
SBL	3	SBL	0	SBL	3
SBT	18	SBT	0	SBT	18

APPENDIX C

Year 2019 Monthly Data

Group 4 Averages:

Urban Highways

<u>Month</u>	<u>ADT</u>	For WARRANTS	For Traffic
		<u>Adjustment to</u>	<u>Adjustment to</u>
		<u>Average</u>	<u>Peak</u>
January	11,431	1.12	1.23
February	11,848	1.08	1.18
March	12,141	1.06	1.15
April	12,860	1.00	1.09
May	13,551	0.95	1.03
June	13,785	0.93	1.02
July	13,942	0.92	1.01
August	14,016	0.92	1.00
September	13,379	0.96	1.05
October	13,339	0.96	1.05
November	12,265	1.05	1.14
December	11,496	1.12	1.22

Average ADT: 12,838

Peak ADT: 14,016

Covid Factor Calculation - NHDOT Methodology

NHDOT currently has a preference on the methodology to be used in determining any required adjustments to traffic counts collected during the pandemic (to compare the month of counts in 2019 and in the pandemic year of the counts).

- 1 Select the appropriate permanent count station.
- 2 Scroll to the "Volume Count" section and select on one of the eyeball icons.
- 3 A new screen will open and select the "Compare Count" tab at the bottom.
- 4 A new window will open and scroll to the "Date Range Selection" section and type in or select the Count Date Range. The first day of the month, to the last day of the month should be selected.
- 5 Since NHDOT prefers that separate pandemic adjustment factors be used for the different time periods, select Monday through Friday for the weekday daily, weekday AM peak hour, and weekday PM peak hour comparisons. A separate analysis would be performed in determining the Saturday daily and Saturday comparisons.
- 6 Click the "Add Count" button and the time period and days of the week selected will appear on the graph to the left.
- 7 For the pre-pandemic volume comparison, go to the "Count Date Range" and select the same month and days but use 2019 as the pre-pandemic base. For this project, the 2019 month (first day to last day) would be selected.
- 8 Click the "Add Count" button and the 2019 data selected will appear on the graph to the right.
- 9 Go to the top of the screen and select the "Grid" tab.
- 10 Hourly and daily ("Total") data will then be shown for the time periods selected for comparison. To determine the weekday AM peak hour comparison, review the highest peak hour traffic volumes from the counts between 7:0 AM (weekday PM = 4-6 PM, Saturday midday = 11 AM-1 PM).

Hillsborough County - Group 4 Highway Station (Minor Arterial)				
02297001	Merrimack	US 3 (Daniel Webster Hwy) north of Hilton Dr	<u>March</u>	
			2023	2019
				change
	AM		1205	1587
	PM		1322	1487
				-24.1%
				-11.1%

Strafford County - Group 4 Highway Station (Principal Arterial)				
'02133021	Durham	US 4 east of NH 108		
			2023	2019
				change
	AM		1201	1074
	PM		1438	1379
				11.8%
				4.3%

Strafford County - Group 4 Highway Station (Principal Arterial)				
02255001	Lee	NH 125 (Calef Hwy) north of Pinkham Rd		
			2023	2019
				change
	AM		1144	1268
	PM		1248	1367
				-9.8%
				-8.7%

Average		
Covid	-7.4%	AM
Adjust	-5.2%	PM

Station: 02297001 Merrimack

Count 1						
N/A For Aggregated Counts						X
INTERVAL:15-MIN						
Time	15-min Interval				Hourly Count	% Diff
	1st	2nd	3rd	4th		
0:00-1:00	16	14	11	9	50	32.6
1:00-2:00	11	8	6	6	31	-34.7
2:00-3:00	8	8	9	9	34	-16.2
3:00-4:00	9	12	15	18	54	13.9
4:00-5:00	22	28	34	41	125	9.2
5:00-6:00	48	73	91	104	316	2.2
6:00-7:00	122	168	207	236	733	-5.2
7:00-8:00	261	309	327	308	1205	-10.2
8:00-9:00	283	269	248	226	1026	-17.0
9:00-10:00	215	203	207	194	819	-9.3
10:00-11:00	184	184	187	185	740	-11.1
11:00-12:00	196	197	203	217	813	-2.1
12:00-13:00	224	232	219	218	893	-5.1
13:00-14:00	212	210	213	216	851	-3.6
14:00-15:00	239	241	262	258	1000	-1.8
15:00-16:00	265	291	307	303	1166	-8.1
16:00-17:00	313	333	341	335	1322	-3.9
17:00-18:00	353	348	323	293	1317	-7.3
18:00-19:00	260	234	201	170	865	-22.7
19:00-20:00	163	159	142	143	607	-16.3
20:00-21:00	131	121	110	104	466	-15.6
21:00-22:00	94	80	68	57	299	-8.6
22:00-23:00	51	44	39	33	167	-9.7
23:00-24:00	33	27	24	16	100	-8.6
Total	Counts = 14				14999	-8.5

Count Criteria	
Local Id	02297001
Start Date	03/01/2023
End Date	03/31/2023
Aggregation	AVG
Include Abnormal	False
Selected Days	Tuesday Wednesday Thursday

Count 2						
N/A For Aggregated Counts						X
INTERVAL:60-MIN						
Time	60-min Interval				Hourly Count	% Diff
	1st	2nd	3rd	4th		
0:00-1:00	-	-	-	-	58	46.8
1:00-2:00	-	-	-	-	35	-22.8
2:00-3:00	-	-	-	-	30	-28.6
3:00-4:00	-	-	-	-	48	2.1
4:00-5:00	-	-	-	-	118	3.4
5:00-6:00	-	-	-	-	295	-4.6
6:00-7:00	-	-	-	-	855	10.2
7:00-8:00	-	-	-	-	1587	17.3
8:00-9:00	-	-	-	-	1309	7.3
9:00-10:00	-	-	-	-	853	-5.3
10:00-11:00	-	-	-	-	795	-3.9
11:00-12:00	-	-	-	-	862	3.8
12:00-13:00	-	-	-	-	897	-4.7
13:00-14:00	-	-	-	-	857	-2.9
14:00-15:00	-	-	-	-	1046	2.7
15:00-16:00	-	-	-	-	1268	0.3
16:00-17:00	-	-	-	-	1487	7.8
17:00-18:00	-	-	-	-	1597	11.9
18:00-19:00	-	-	-	-	1030	-5.3
19:00-20:00	-	-	-	-	661	-7.8
20:00-21:00	-	-	-	-	529	-3.0
21:00-22:00	-	-	-	-	348	6.5
22:00-23:00	-	-	-	-	198	7.3
23:00-24:00	-	-	-	-	129	16.8
Total	Counts = 12				16892	3.4

Count Criteria	
Local Id	02297001
Start Date	03/01/2019
End Date	03/31/2019
Aggregation	AVG
Include Abnormal	False
Selected Days	Tuesday Wednesday Thursday

Station: '02133021 Durham

Count 1

N/A For Aggregated Counts X

INTERVAL:15-MIN

Time	15-min Interval				Hourly Count	% Diff
	1st	2nd	3rd	4th		
0:00-1:00	12	18	13	8	51	-14.5
1:00-2:00	8	6	5	9	28	43.5
2:00-3:00	8	8	8	12	36	2.8
3:00-4:00	14	24	23	27	88	-9.7
4:00-5:00	35	42	51	90	218	-4.5
5:00-6:00	108	108	107	134	457	-11.2
6:00-7:00	176	205	206	243	830	-14.4
7:00-8:00	290	333	292	286	1201	-11.7
8:00-9:00	256	263	213	205	937	-15.6
9:00-10:00	214	221	186	194	815	-1.0
10:00-11:00	198	198	195	205	796	-11.4
11:00-12:00	209	220	208	234	871	-7.8
12:00-13:00	226	246	226	234	932	-9.4
13:00-14:00	244	251	236	256	987	-8.9
14:00-15:00	268	295	297	325	1185	-8.9
15:00-16:00	321	367	324	352	1364	-11.5
16:00-17:00	350	362	341	385	1438	-10.5
17:00-18:00	361	307	251	254	1173	-15.4
18:00-19:00	223	194	168	171	756	-10.8
19:00-20:00	144	132	121	130	527	-11.1
20:00-21:00	111	94	98	96	399	-17.2
21:00-22:00	83	77	63	62	285	-1.0
22:00-23:00	52	39	36	41	168	11.3
23:00-24:00	29	33	22	28	112	-12.6
Total	Counts = 14				15654	-10.4

Count Criteria

Local Id	02133021
Start Date	03/01/2023
End Date	03/31/2023
Aggregation	AVG
Include Abnormal	False
Selected Days	Tuesday Wednesday Thursday

Count 2

N/A For Aggregated Counts X

INTERVAL:60-MIN

Time	60-min Interval				Hourly Count	% Diff
	1st	2nd	3rd	4th		
0:00-1:00	-	-	-	-	89	40.5
1:00-2:00	-	-	-	-	40	75.9
2:00-3:00	-	-	-	-	51	37.2
3:00-4:00	-	-	-	-	61	-45.6
4:00-5:00	-	-	-	-	165	-32.1
5:00-6:00	-	-	-	-	407	-22.7
6:00-7:00	-	-	-	-	838	-13.5
7:00-8:00	-	-	-	-	1074	-22.8
8:00-9:00	-	-	-	-	978	-11.4
9:00-10:00	-	-	-	-	836	1.6
10:00-11:00	-	-	-	-	769	-14.8
11:00-12:00	-	-	-	-	823	-13.5
12:00-13:00	-	-	-	-	869	-16.4
13:00-14:00	-	-	-	-	895	-18.6
14:00-15:00	-	-	-	-	1023	-23.5
15:00-16:00	-	-	-	-	1320	-14.8
16:00-17:00	-	-	-	-	1379	-14.7
17:00-18:00	-	-	-	-	1286	-6.3
18:00-19:00	-	-	-	-	873	3.6
19:00-20:00	-	-	-	-	617	4.6
20:00-21:00	-	-	-	-	483	1.9
21:00-22:00	-	-	-	-	358	21.7
22:00-23:00	-	-	-	-	199	28.1
23:00-24:00	-	-	-	-	127	0.0
Total	Counts = 11				15560	-11.0

Count Criteria

Local Id	02133021
Start Date	03/01/2019
End Date	03/31/2019
Aggregation	AVG
Include Abnormal	False
Selected Days	Tuesday Wednesday Thursday

Station: 02255001 Lee

Count 1

N/A For Aggregated Counts X

INTERVAL: 15-MIN

Time	15-min Interval				Hourly Count	% Diff
	1st	2nd	3rd	4th		
0:00-1:00	12	9	9	7	37	24.2
1:00-2:00	10	8	7	6	31	48.0
2:00-3:00	9	9	9	7	34	26.7
3:00-4:00	11	13	17	22	63	-9.1
4:00-5:00	29	42	46	55	172	5.4
5:00-6:00	74	85	111	126	396	-9.8
6:00-7:00	152	201	247	239	839	-12.4
7:00-8:00	251	277	313	303	1144	-7.4
8:00-9:00	230	244	232	201	907	-7.3
9:00-10:00	186	172	184	170	712	-15.8
10:00-11:00	165	169	175	176	685	-16.8
11:00-12:00	177	172	182	184	715	1.4
12:00-13:00	186	190	198	187	761	-9.3
13:00-14:00	189	197	194	201	781	0.5
14:00-15:00	210	224	226	246	906	-9.8
15:00-16:00	260	276	304	330	1170	-9.4
16:00-17:00	302	326	309	311	1248	-8.8
17:00-18:00	322	313	265	216	1116	-3.1
18:00-19:00	199	187	162	133	681	-10.8
19:00-20:00	121	115	100	91	427	-20.0
20:00-21:00	90	88	85	77	340	0.0
21:00-22:00	69	62	55	45	231	11.4
22:00-23:00	53	48	28	27	156	12.2
23:00-24:00	29	29	23	13	94	19.9
Total	Counts = 14				13646	-7.5

Count Criteria

Local Id	02255001
Start Date	03/01/2023
End Date	03/31/2023
Aggregation	AVG
Include Abnormal	False
Selected Days	Tuesday Wednesday Thursday

Count 2

N/A For Aggregated Counts X

INTERVAL: 60-MIN

Time	60-min Interval				Hourly Count	% Diff
	1st	2nd	3rd	4th		
0:00-1:00	-	-	-	-	54	60.2
1:00-2:00	-	-	-	-	28	38.3
2:00-3:00	-	-	-	-	35	29.5
3:00-4:00	-	-	-	-	79	13.5
4:00-5:00	-	-	-	-	185	12.6
5:00-6:00	-	-	-	-	464	6.0
6:00-7:00	-	-	-	-	960	1.0
7:00-8:00	-	-	-	-	1268	2.9
8:00-9:00	-	-	-	-	973	-0.3
9:00-10:00	-	-	-	-	744	-11.4
10:00-11:00	-	-	-	-	685	-16.8
11:00-12:00	-	-	-	-	723	2.5
12:00-13:00	-	-	-	-	787	-5.9
13:00-14:00	-	-	-	-	800	2.9
14:00-15:00	-	-	-	-	933	-6.8
15:00-16:00	-	-	-	-	1232	-4.3
16:00-17:00	-	-	-	-	1367	0.3
17:00-18:00	-	-	-	-	1245	7.8
18:00-19:00	-	-	-	-	821	7.8
19:00-20:00	-	-	-	-	521	-0.2
20:00-21:00	-	-	-	-	382	11.6
21:00-22:00	-	-	-	-	254	20.9
22:00-23:00	-	-	-	-	178	25.3
23:00-24:00	-	-	-	-	103	28.9
Total	Counts = 12				14821	0.8

Count Criteria

Local Id	02255001
Start Date	03/01/2019
End Date	03/31/2019
Aggregation	AVG
Include Abnormal	False
Selected Days	Tuesday Wednesday Thursday

Intersection of Lowell Road & Central Street in Hudson, NH

Date of Observation: 4-May-23
Peak Hours: 7:15 am & 4:45 pm

TFM Job # 18149.00

Time	SB			WB			NB			EB			Totals
	Right	Through	Left	Right	Through	Left	Right	Through	Left	Right	Through	Left	Sum
7:15 AM	30		57	35	96						148	34	400
7:30 AM	51		67	43	126						139	37	463
7:45 AM	25		49	20	104						197	24	419
8:00 AM	21		56	25	126						152	17	397
Sum=	127	0	229	123	452	0	0	0	0	0	636	112	1679

PM PEAK HOUR	127	0	229	123	452	0	0	0	0	0	636	112	1679
--------------	-----	---	-----	-----	-----	---	---	---	---	---	-----	-----	------

Time	SB			WB			NB			EB			Totals
	Right	Through	Left	Right	Through	Left	Right	Through	Left	Right	Through	Left	Sum
4:45 PM	23		46	29	175						179	51	503
5:00 PM	34		44	51	182						149	52	512
5:15 PM	22		53	30	228						185	52	570
5:30 PM	27		61	30	176						156	50	500
Sum=	106	0	204	140	761	0	0	0	0	0	669	205	2085

PM PEAK HOUR	106	0	204	140	761	0	0	0	0	0	669	205	2085
--------------	-----	---	-----	-----	-----	---	---	---	---	---	-----	-----	------

Intersection of Lowell Road & Central Street in Hudson, NH

Date of Observation: 4-May-23
Peak Hours: 7:15 am & 4:45 pm

TFM Job # 18149.00

AM ROADWAY PEAK	SB			App TTI	WB			App TTI	NB			App TTI	EB			App TTI
	Right	Through	Left		APPR.	Right	Through		Left	APPR.	Right		Through	Left	APPR.	
7:15 AM	30	0	57	87	35	96	0	131	0	0	0	0	0	148	34	182
7:30 AM	51	0	67	118	43	126	0	169	0	0	0	0	0	139	37	176
7:45 AM	25	0	49	74	20	104	0	124	0	0	0	0	0	197	24	221
8:00 AM	21	0	56	77	25	126	0	151	0	0	0	0	0	152	17	169
AVE. 15 MIN	31.75	0	57.25	89	30.75	113	0	143.75	0	0	0	0	0	159	28	187
Peak 15 Min	51	0	67	118	43	126	0	169	0	0	0	0	0	197	37	221
APPROACH PHF				0.754				0.851				#DIV/0!				0.846

PM ROADWAY PEAK	SB			App TTI	WB			App TTI	NB			App TTI	EB			App TTI
	Right	Through	Left		APPR.	Right	Through		Left	APPR.	Right		Through	Left	APPR.	
4:45 PM	23	0	46	69	29	175	0	204	0	0	0	0	0	179	51	230
5:00 PM	34	0	44	78	51	182	0	233	0	0	0	0	0	149	52	201
5:15 PM	22	0	53	75	30	228	0	258	0	0	0	0	0	185	52	237
5:30 PM	27	0	61	88	30	176	0	206	0	0	0	0	0	156	50	206
AVE. 15 MIN	26.5	0	51	77.5	35	190.25	0	225.25	0	0	0	0	0	167.25	51.25	218.5
Peak 15 Min	34	0	61	88	51	228	0	258	0	0	0	0	0	185	52	237
APPROACH PHF				0.881				0.873				#DIV/0!				0.922

Hudson Lowell Road Growth Rates

Network Link ID	Street	Location	Growth 2020 to 2030				Daily
			AM peak period	MD peak period	PM peak period	NT peak period	
4475	Lowell Road	north of Atwood Ave	20.7%	31.3%	11.4%	29.1%	24.2%
4564	Lowell Road	south of Atwood Ave	20.7%	31.4%	11.3%	29.2%	24.3%

Network Link ID	Street	Location	Growth 2020 to 2045				Daily
			AM peak period	MD peak period	PM peak period	NT peak period	
4475	Lowell Road	north of Atwood Ave	19.3%	21.0%	15.7%	38.0%	25.5%
4564	Lowell Road	south of Atwood Ave	19.2%	42.0%	15.5%	38.2%	30.7%

Network Link ID	Street	Location	Growth 2030 to 2045				Daily
			AM peak period	MD peak period	PM peak period	NT peak period	
4475	Lowell Road	north of Atwood Ave	-1.2%	-7.8%	3.8%	6.9%	1.0%
4564	Lowell Road	south of Atwood Ave	-1.2%	8.0%	3.8%	6.9%	5.2%

RE: Hudson Townwide study


MW Matt Waitkins <MattW@nashuarpc.org>
To Jennifer Porter
Cc Kristin Wardner, Ed Bromage
Follow up. Start by Monday, July 10, 2023. Due by Monday, July 10, 2023.
Thu 5/18/2023 3:19 PM

Reply Reply All Forward

Hudson Lowell Road Growth Rates.xlsx
xlsx File

Good afternoon Jennifer,
The growth rates for Lowell Road in Hudson are attached.
I hope this is helpful and please don't hesitate to reach out with additional questions.
Respectfully,
Matt

Matt Waitkins - AICP
MPO Coordinator
(603) 417-6570 x6566
matw@nashuarpc.org

 **NRPC**
Nashua Regional Planning Commission
Metropolitan Planning Organization
30 Temple Street, Suite 310, Nashua, NH 03060
nashuarpc.org | [@NashuaRPC](https://www.facebook.com/nashuarpc) | [facebook.com/nashuarpc](https://www.facebook.com/nashuarpc)

APPENDIX D

HUDSON LOGISTICS CENTER 43 Lowell Road						
Traffic Impact Study, Prepared by Langan Engineering & Environmental Services, Inc., dated September 2022.						
AM			PM			
In	Out		In	Out	In	Out
36	36		44	44	44	44
Per Trip Assignment Diagram						

3: Lowell Road at Central Street						
AM Trips			PM Trips			
Movement	In	Out	In	Out	In	Out
EBL						
EBT	36		44			
WBT		36				44
WBR						
SBL						
SBR						

3: Lowell Road at Central Street						
AM Trips			PM Trips			
Movement	In	Out	In	Out	In	Out
EBL						
EBT	3		11			
WBT		0				21
WBR						
SBL						
SBR						

4: Lowell Road at County Road (N)						
AM Trips			PM Trips			
Movement	In	Out	In	Out	In	Out
WBL						
WBR						
NBT		0				21
NBR						
SBL						
SBT	3		11			

5: Lowell Road at Prop. Site Drive						
AM Trips			PM Trips			
Movement	In	Out	In	Out	In	Out
EBL						
EBR						
NBL						
NBT		0				21
SBT	3		11			
SBR						

DISTRIBUTION WAREHOUSE Friars Drive						
Traffic Memo, by TFM for Tenant #1 Update, dated November 2022.						
AM			PM			
In	Out		In	Out	In	Out
3	0		11		21	
Per Site Trip Diagrams						

AM TOTAL: OTHER DEVELOPMENTS						
TOTAL AM: 75						
Other Development AM:						
3: Lowell Road at Central Street						
Movement						
EBL	0					
EBT	39					
WBT		36				
WBR						
SBL						
SBR						

PM TOTAL: OTHER DEVELOPMENTS						
TOTAL PM: 120						
Other Development PM:						
3: Lowell Road at Central Street						
Movement						
EBL	0					
EBT	55					
WBT		65				
WBR						
SBL						
SBR						

4: Lowell Road at County Road (N)						
AM Trips			PM Trips			
Movement	In	Out	In	Out	In	Out
WBL						
WBR						
NBT		0				36
NBR						
SBL						
SBT	39					

5: Lowell Road at Prop. Site Drive						
AM Trips			PM Trips			
Movement	In	Out	In	Out	In	Out
EBL						
EBR						
NBL						
NBT		0				36
SBT	39					
SBR						

5: Lowell Road at Prop. Site Drive						
AM Trips			PM Trips			
Movement	In	Out	In	Out	In	Out
EBL						
EBR						
NBL						
NBT		0				65
SBT	55					
SBR						

HUDSON LOGISTICS CENTER 43 Lowell Road						
Traffic Impact Study, Prepared by Langan Engineering & Environmental Services, Inc., dated September 2022.						
AM			PM			
In	Out		In	Out	In	Out
36	36		44	44	44	44
Per Trip Assignment Diagram						

6: Lowell Road at County Road (S)						
AM Trips			PM Trips			
Movement	In	Out	In	Out	In	Out
WBL						
WBR						
NBT		36				44
NBR						
SBL					44	
SBT	36					

7: Atwood Lane at Prop. Site Drive						
AM Trips			PM Trips			
Movement	In	Out	In	Out	In	Out
EBL						
EBT						
WBT						
WBR						
SBL						
SBR						

8: Lowell Road at Atwood Ave						
AM Trips			PM Trips			
Movement	In	Out	In	Out	In	Out
EBL						
EBR						
NBL						
NBT		36				44
SBT	36				44	
SBR						

9: Lowell Road at Pelham Road						
AM Trips			PM Trips			
Movement	In	Out	In	Out	In	Out
WBL						
WBR						
NBT		36				44
NBR						
SBL					44	
SBT	36					

DISTRIBUTION WAREHOUSE Friars Drive						
Traffic Memo, by TFM for Tenant #1 Update, dated November 2022.						
AM			PM			
In	Out		In	Out	In	Out
3	0		11	21	21	21
Per Site Trip Diagrams						

6: Lowell Road at County Road (S)						
AM Trips			PM Trips			
Movement	In	Out	In	Out	In	Out
WBL						
WBR						
NBT		0				21
NBR						
SBL					11	
SBT	3					

7: Atwood Lane at Prop. Site Drive						
AM Trips			PM Trips			
Movement	In	Out	In	Out	In	Out
EBL						
EBT						
WBT						
WBR						
SBL						
SBR						

8: Lowell Road at Atwood Ave						
AM Trips			PM Trips			
Movement	In	Out	In	Out	In	Out
EBL						
EBR						
NBL						
NBT		0				21
SBT	3				11	
SBR						

9: Lowell Road at Pelham Road						
AM Trips			PM Trips			
Movement	In	Out	In	Out	In	Out
WBL						
WBR						
NBT		0				21
NBR						
SBL					11	
SBT	3					

PM TOTAL: OTHER DEVELOPMENTS

TOTAL PM
Other Development PM: 120

6: Lowell Road at County Road (S)						
Movement						
WBL		0				0
WBR						0
NBT		65				65
NBR						0
SBL					0	0
SBT	55					55

7: Atwood Lane at Prop. Site Drive						
Movement						
EBL		0				0
EBT						0
WBT						0
WBR						0
SBL					0	0
SBR						0

8: Lowell Road at Atwood Ave						
Movement						
EBL		0				0
EBR						0
NBL						0
NBT		65				65
SBT	55				55	55
SBR						0

9: Lowell Road at Pelham Road						
Movement						
WBL		0				0
WBR						0
NBT		65				65
NBR						0
SBL					0	0
SBT	55					55

AM TOTAL: OTHER DEVELOPMENTS

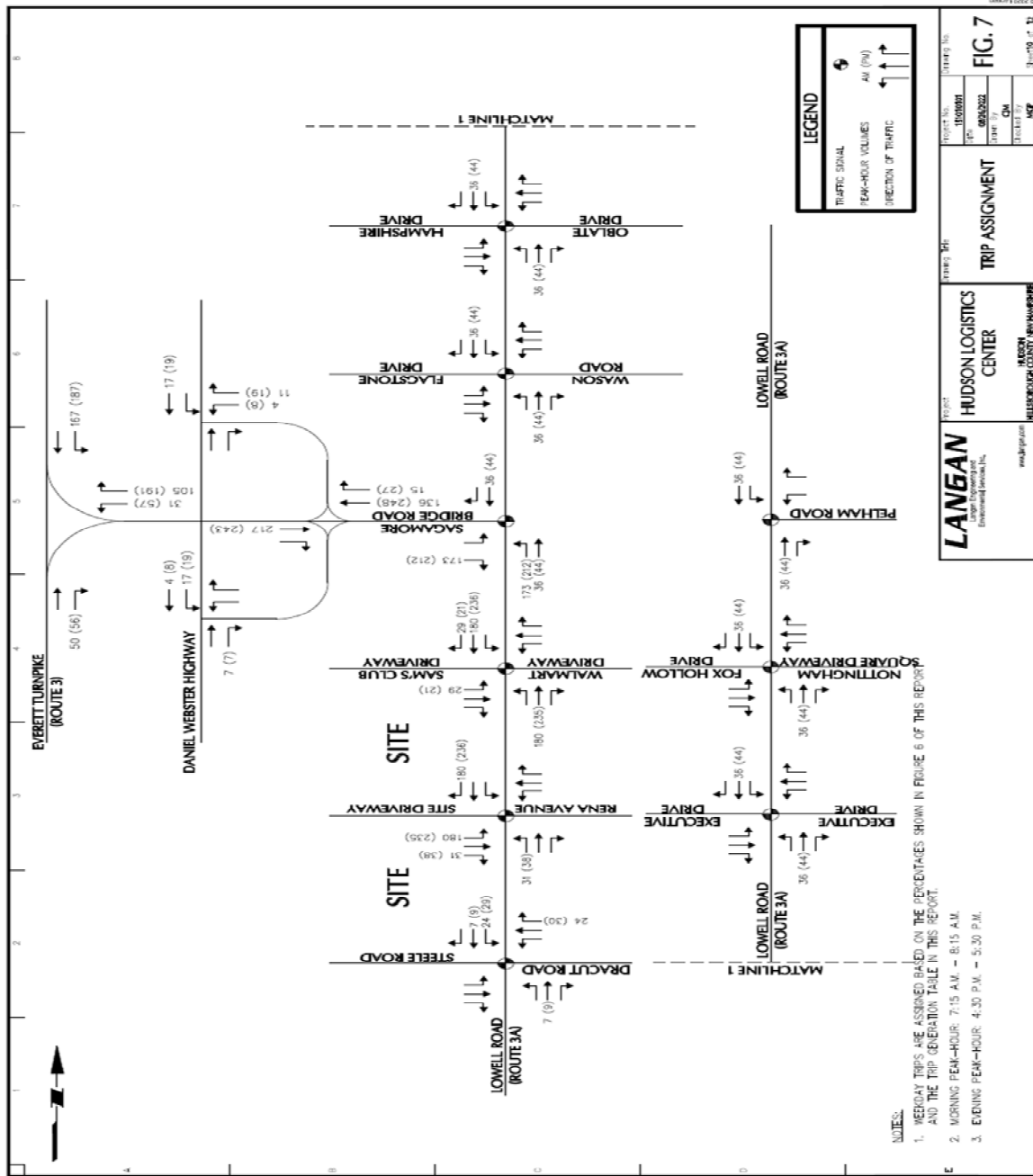
TOTAL AM
Other Development AM: 75

6: Lowell Road at County Road (S)						
Movement						
WBL		0				0
WBR						0
NBT		36				36
NBR						0
SBL					0	0
SBT	39					39

7: Atwood Lane at Prop. Site Drive						
Movement						
EBL		0				0
EBT						0
WBT						0
WBR						0
SBL					0	0
SBR						0

8: Lowell Road at Atwood Ave						
Movement						
EBL		0				0
EBR						0
NBL						0
NBT		36				36
SBT	39				39	39
SBR						0

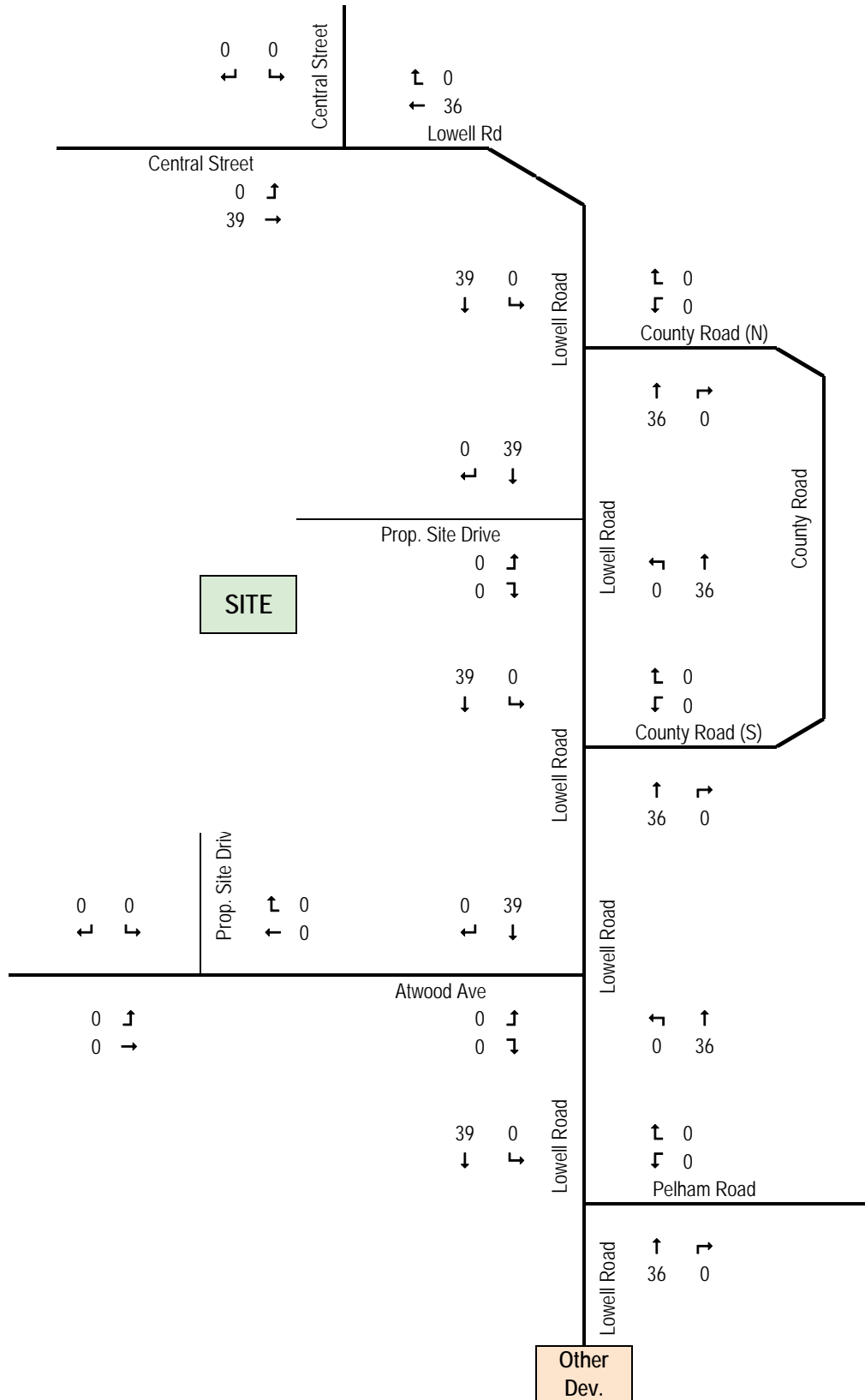
9: Lowell Road at Pelham Road						
Movement						
WBL		0				0
WBR						0
NBT		36				36
NBR						0
SBL					0	0
SBT	39					39



Total Site Trips [Tenant #1 Update] PM Peak Hour		T#1 Update			
XX Trips		11	0	Lowell Rd	↑ 0
		↓	↘	Lowell Rd	↓ 0
				Pelham Road	
					↑ ↘
					21 0
		0	11	Lowell Road	↑ 0
		↘	↓	Lowell Road	← 0
				Lowell Road	↓ 0
				Fox Hollow Drive (Plaza)	
	Fox Hollow Drive	0	↘		↘ ↑ ↘
		0	→		0 21 0
		0	↓		
		11	0		
		↘	↓		
	SITE				
	Friars Road	115	↘		↑
					21
		0	115		↑ 0
		↘	↓		← 0
					↓ 0
				Private Driveway	
	Executive Drive	21	↘		↘ ↑ ↘
		0	→		22 0 0
		2	↓		
		0	117		↑ 0
		↘	↓		← 0
					↓ 0
				Oblate Drive	
	Hampshire Drive	0	↘		↘ ↑ ↘
		0	→		6 22 0
		0	↓		
		0	117		↑ 0
		↘	↓		← 0
					↓ 0
				Wason Road	
	Flagstone Drive	0	↘		↘ ↑ ↘
		0	→		33 28 0
		0	↓		
		99	18		
		↘	↓		
	Sagamore Bridge	52	↘		↘ ↑
		0	↓		0 9

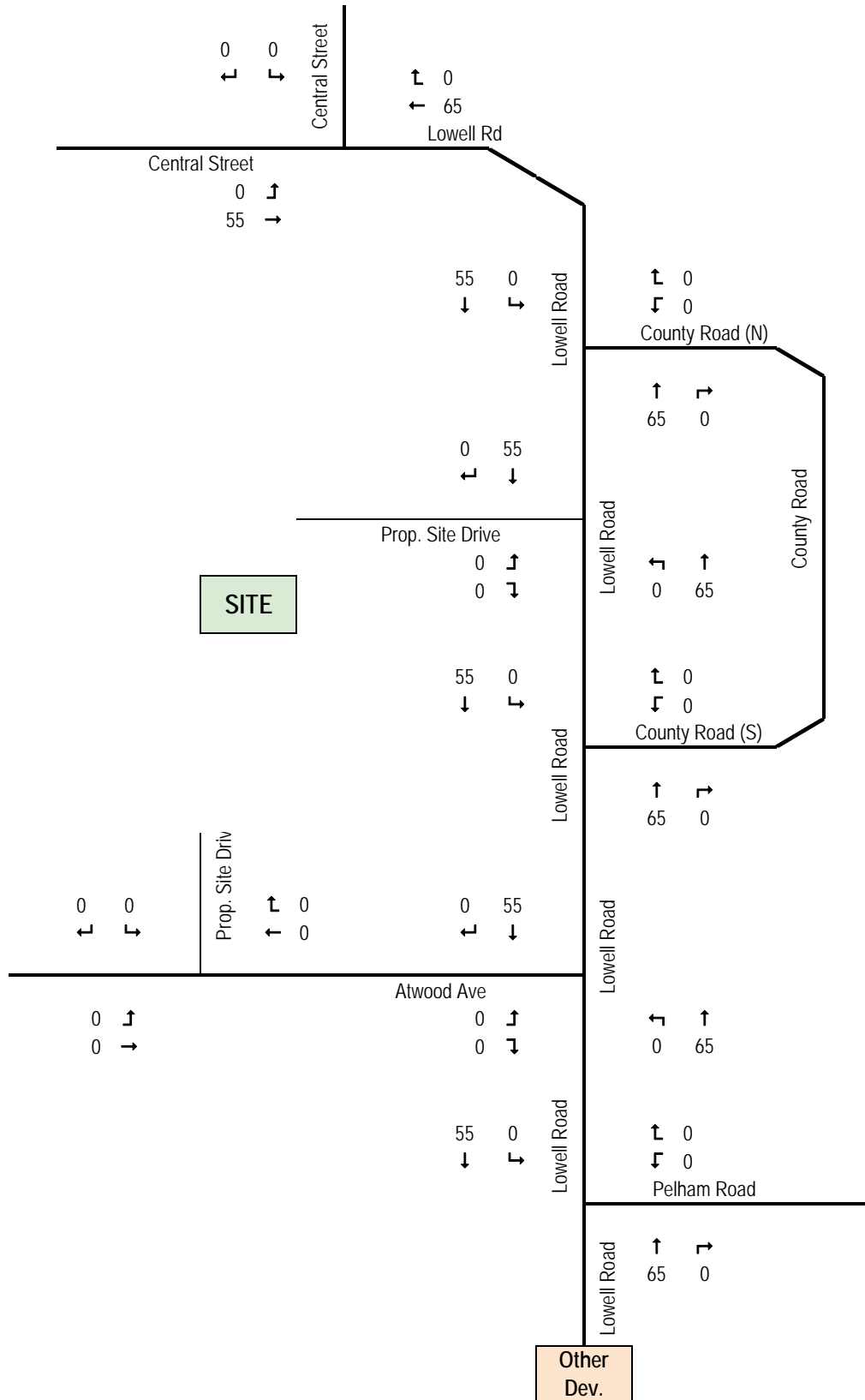
OTHER DEVELOPMENTS
 Hudson Logistics Center & Friars Distribution
 AM Peak Hour

XX Site Trips



OTHER DEVELOPMENTS
 Hudson Logistics Center & Friars Distribution
 AM Peak Hour

XX Site Trips



APPENDIX E

Background Traffic Volumes

AM Peak data
 NRPC Growth Rate (2020-2030) 0.0207 North of Atwood Ave
 NRPC Growth Rate (2020-2030) 0.0207 South of Atwood Ave
 May 2019 Seasonal Adjust 1.03 NHDOT Group 4 Averages
 Covid/Stay-home factor 1.074 NHDOT Methodology

Site Trips are not Seasonally Adjusted or Grown.
ALL TRIPS ARE COVID ADJUSTED

AM Peak Hour	Existing 2023 (Raw data)	Existing 2023 w/ Seasonal Adjust	Covid/Stay Home Adjustment	2023 ADJUST D	2023 BASE	2023-2034											Counted Heavy
						2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	
3: Lowell Road at Central Street																	
	7:15 AM town counts																
EBL	112	115	1.074	124	124	126.57	129.19	131.86	134.59	137.38	140.22	143.12	146.08	149.10	152.19	155	-
EBT	636	655	1.074	703	703	717.55	732.40	747.56	763.03	778.82	794.94	811.40	828.20	845.34	862.84	881	-
WBT	452	466	1.074	500	500	510.35	520.91	531.69	542.70	553.93	565.40	577.10	589.05	601.24	613.69	626	-
WBR	123	127	1.074	136	136	138.82	141.69	144.62	147.61	150.67	153.79	156.97	160.22	163.54	166.93	170	-
SBL	229	236	1.074	253	253	258.24	263.59	269.05	274.62	280.30	286.10	292.02	298.06	304.23	310.53	317	-
SBR	127	131	1.074	141	141	143.92	146.90	149.94	153.04	156.21	159.44	162.74	166.11	169.55	173.06	177	-
4: Lowell Road at County Road (N)																	
	7:15 AM (C)																
WBL	4	4	1.074	4	4	4.08	4.16	4.25	4.34	4.43	4.52	4.61	4.71	4.81	4.91	5	25%
WBR	29	30	1.074	32	32	32.66	33.34	34.03	34.73	35.45	36.18	36.93	37.69	38.47	39.27	40	0%
NBT	519	535	1.074	575	575	586.90	599.05	611.45	624.11	637.03	650.22	663.68	677.42	691.44	705.75	720	6%
NBR	6	6	1.074	6	6	6.12	6.25	6.38	6.51	6.64	6.78	6.92	7.06	7.21	7.36	8	0%
SBL	25	26	1.074	28	28	28.58	29.17	29.77	30.39	31.02	31.66	32.32	32.99	33.67	34.37	35	11%
SBT	860	886	1.074	952	952	971.71	991.82	1012.35	1033.31	1054.70	1076.53	1098.81	1121.56	1144.78	1168.48	1193	4%
5: Lowell Road at Prop. Site Drive																	
	7:15 AM calculated																
EBL			1.074	561	568	579.76	591.76	604.01	616.51	629.27	642.3	655.59	669.17	683.02	697.15	711	0%
EBR			1.074	1011	1011	1031.9	1053.3	1075.1	1097.4	1120.1	1143.3	1166.9	1191.1	1215.7	1240.9	1267	0%
NBL																	0%
NBT	507	522	1.074	561	568	579.76	591.76	604.01	616.51	629.27	642.3	655.59	669.17	683.02	697.15	711	5%
SBT	914	941	1.074	1011	1011	1031.9	1053.3	1075.1	1097.4	1120.1	1143.3	1166.9	1191.1	1215.7	1240.9	1267	3%
SBR																	0%

AM Peak data		0.0207 North of Atwood Ave	
NRPC Growth Rate (2020-2030)		0.0207 South of Atwood Ave	
NRPC Growth Rate (2020-2030)		1.03 NHDOT Group 4 Averages	
May 2019 Seasonal Adjust		1.074 NHDOT Methodology	
Covid/Stay-home factor		1.074	

Site Trips are not Seasonally Adjusted or Grown.
ALL TRIPS ARE COVID ADJUSTED

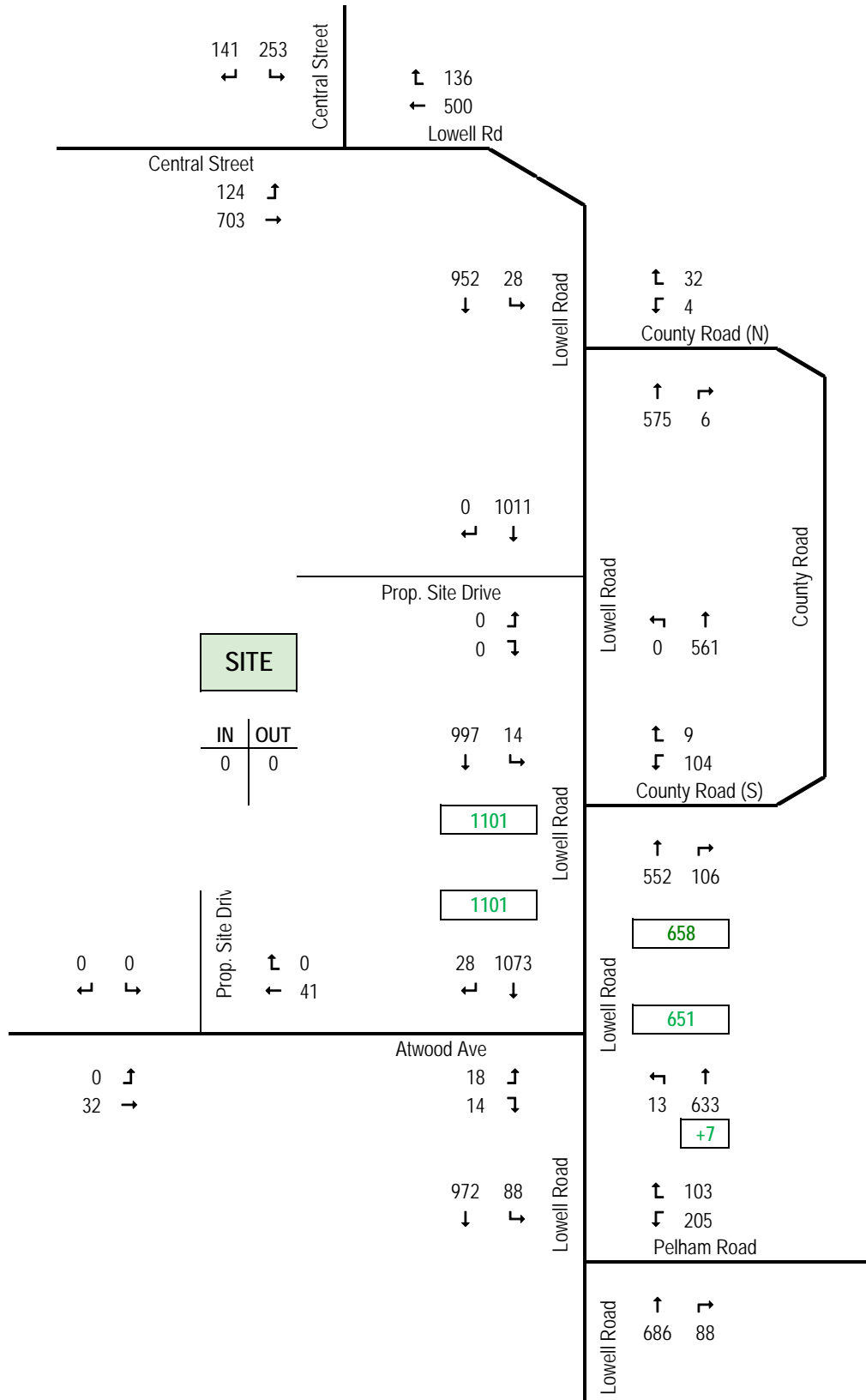
AM Peak Hour	Existing 2023 (Raw data)	Existing 2023 w/ Seasonal Adjustment	Covid/Stay Home Adjustment	2023 ADJUSTE D	2023 BASE	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	Counted Heavy	% Heavy	PM PHF	
						2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034				
6: Lowell Road at County Road (S)																				
7:15 AM																				
Movement	(B)																			
WBL	94	97	1.074	104	104	106.15	108.35	110.59	112.88	115.22	117.61	120.04	122.52	125.06	127.65	130	1%	0.88	1	
WBR	8	8	1.074	9	9	9.19	9.38	9.57	9.77	9.97	10.18	10.39	10.61	10.83	11.05	11	0%		0	
NBT	499	514	1.074	552	+7	570.57	582.38	594.44	606.74	619.30	632.12	645.20	658.56	672.19	686.10	700	5%	0.92	25	
NBR	96	99	1.074	106		106	108.19	110.43	112.72	115.05	117.43	119.86	122.34	124.87	127.45	133	2%		2	
SBL	13	13	1.074	14		14	14.29	14.59	14.89	15.20	15.51	15.83	16.16	16.49	16.83	17.18	18	14%	0.88	2
SBT	901	928	1.074	997		997	1017.64	1038.71	1060.21	1082.16	1104.56	1127.42	1150.76	1174.58	1198.89	1223.71	1249	4%		35
7: Atwood Lane at Prop. Site Drive																				
7:15 AM																				
calculated																				
Movement																				
EBL	30	30	1.074	32	32	32	32	32	32	32	32	32	32	32	32	32	0%	0.90	0	
EBT	38	38	1.074	41	41	41	41	41	41	41	41	41	41	41	41	41	0%	0.90	0	
WBT																	0%			
WBR																	0%			
SBL																	0%			
SBR																	0%			
8: Lowell Road at Atwood Ave																				
7:15 AM																				
(A)																				
Movement																				
EBL	17	17	1.074	18	18	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18	0%	0.75	0	
EBR	13	13	1.074	14	14	14.00	14.00	14.00	14.00	14.00	14.00	14.00	14.00	14.00	14.00	14	0%		0	
NBL	12	12	1.074	13	13	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13	0%	0.97	0	
NBT	572	589	1.074	633	633	646.10	659.47	673.12	687.05	701.27	715.79	730.61	745.73	761.17	776.93	793	4%		28	
SBT	970	999	1.074	1073	1073	1095.21	1117.88	1141.02	1164.64	1188.75	1213.36	1238.48	1264.12	1290.29	1317.00	1344	3%	0.88	34	
SBR	26	26	1.074	28	28	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28	0%		0	
9: Lowell Road at Pelham Road																				
7:15 AM																				
town counts																				
Movement																				
WBL	185	191	1.074	205	205	209.24	213.57	217.99	222.50	227.11	231.81	236.61	241.51	246.51	251.61	257	-	0.90	-	
WBR	93	96	1.074	103	103	105.13	107.31	109.53	111.80	114.11	116.47	118.88	121.34	123.85	126.41	129	-		-	
NBT	620	639	1.074	686	686	700.20	714.69	729.48	744.58	759.99	775.72	791.78	808.17	824.90	841.98	859	-	0.90	-	
NBR	80	82	1.074	88	88	89.82	91.68	93.58	95.52	97.50	99.52	101.58	103.68	105.83	108.02	110	-		-	
SBL	80	82	1.074	88	88	89.82	91.68	93.58	95.52	97.50	99.52	101.58	103.68	105.83	108.02	110	-		-	
SBT	879	905	1.074	972	972	992.12	1012.66	1033.62	1055.02	1076.86	1099.15	1121.90	1145.12	1168.82	1193.01	1218	-	0.90	-	

AM Peak Hour	2023 BASE	2024	Other Development \$	2024 No-Build	Site Trip Distribution	2024 Build	2034		2034 Build
							2034	2034 No-Build	
3: Lowell Road at Central Street									
<u>Movement</u>									
EBL	124	127	0	127	0	127	155	155	155
EBT	703	718	39	757	17	774	881	920	937
WBT	500	510	36	546	18	564	626	662	680
WBR	136	139	0	139	5	144	170	170	175
SBL	253	258	0	258	6	264	317	317	323
SBR	141	144	0	144	0	144	177	177	177
4: Lowell Road at County Road (N)									
<u>Movement</u>									
WBL	4	4	0	4	0	4	5	5	5
WBR	32	33	0	33	0	33	40	40	40
NBT	575	587	36	623	23	646	720	756	779
NBR	6	6	0	6	0	6	8	8	8
SBL	28	29	0	29	0	29	35	35	35
SBT	952	972	39	1011	24	1035	1193	1232	1256
5: Lowell Road at Prop. Site Drive									
<u>Movement</u>									
EBL	0	0	0	0	64	64	0	0	64
EBR	0	0	0	0	86	86	0	0	86
NBL	0	0	0	0	54	54	0	0	54
NBT	568	580	36	616	-41	575	711	747	706
SBT	1011	1032	39	1071	-74	997	1267	1306	1232
SBR	0	0	0	0	98	98	0	0	98

AM Peak Hour	2023 BASE	2024	Other Development \$	2024 No-Build	Site Trip Distribution	2024 Build	AM Peak Hour	2024	Other Development \$	2024 No-Build	Site Trip Distribution	2024 Build
6: Lowell Road at County Road (S)												
<u>Movement</u>							<u>Movement</u>					
WBL	104	106	0	106	0	106	WBL	0	0	130	0	130
WBR	9	9	0	9	0	9	WBR	11	0	11	0	11
NBT	559	571	36	607	13	620	NBT	700	36	736	13	749
NBR	106	108	0	108	0	108	NBR	133	0	133	0	133
SBL	14	14	0	14	0	14	SBL	18	0	18	0	18
SBT	997	1018	39	1057	12	1069	SBT	1249	39	1288	12	1300
7: Atwood Lane at Prop. Site Drive												
<u>Movement</u>							<u>Movement</u>					
EBL	0	0	0	0	1	1	EBL	0	0	0	1	1
EBT	32	32	0	32	0	32	EBT	32	0	32	0	32
WBT	41	41	0	41	0	41	WBT	41	0	41	0	41
WBR	0	0	0	0	0	0	WBR	0	0	0	0	0
SBL	0	0	0	0	2	2	SBL	0	0	0	2	2
SBR	0	0	0	0	0	0	SBR	0	0	0	0	0
8: Lowell Road at Atwood Ave												
<u>Movement</u>							<u>Movement</u>					
EBL	18	18	0	18	1	19	EBL	18	0	18	1	19
EBR	14	14	0	14	1	15	EBR	14	0	14	1	15
NBL	13	13	0	13	0	13	NBL	13	0	13	0	13
NBT	633	646	36	682	12	694	NBT	793	36	829	12	841
SBT	1073	1095	39	1134	12	1146	SBT	1344	39	1383	12	1395
SBR	28	28	0	28	0	28	SBR	28	0	28	0	28
9: Lowell Road at Pelham Road												
<u>Movement</u>							<u>Movement</u>					
WBL	205	209	0	209	0	209	WBL	257	0	257	0	257
WBR	103	105	0	105	2	107	WBR	129	0	129	2	131
NBT	686	700	36	736	10	746	NBT	859	36	895	10	905
NBR	88	90	0	90	0	90	NBR	110	0	110	0	110
SBL	88	90	0	90	1	91	SBL	110	0	110	1	111
SBT	972	992	39	1031	12	1043	SBT	1218	39	1257	12	1269

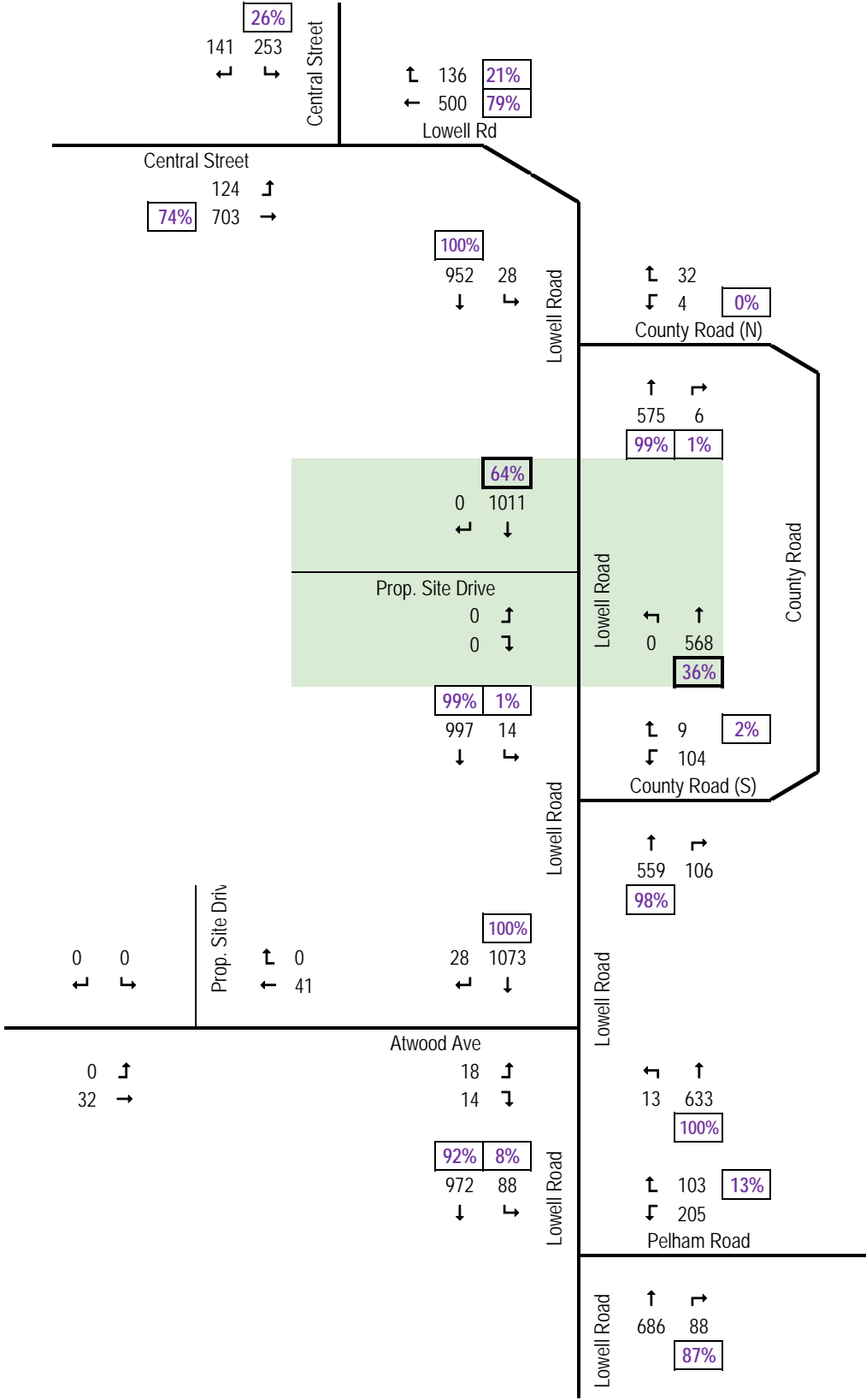
2023 ADJUSTED
BALANCE
AM Peak Hour

XX Volumes



2023 BASE
PRORATA
 AM Peak Hour

XX Volumes



Background Traffic Volumes

PM Peak data
 NRPC Growth Rate (2020-2030) 0.0114 North of Alwood Ave
 NRPC Growth Rate (2020-2030) 0.0113 South of Alwood Ave
 May 2019 Seasonal Adjust 1.03 NHDOT Group 4 Averages
 CovidStay-home factor 1.052 NHDOT Methodology

Site Trips are not Seasonally Adjusted or Grown.
 ALL TRIPS ARE COVID ADJUSTED

PM Peak Hour	Existing 2023 (Raw data)	Existing 2023 w/ Seasonal Adjustment	Covid/Stay Home Adjustment	2023 ADJUSTE D	2023 BASE	2024-2034											Counted Heavy	
						2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034		PM PHF
3: Lowell Road at Central Street																		
4:45 PM town counts																		
EBL	211	211	1.052	222	222	224.53	227.09	229.68	232.30	234.95	237.63	240.34	243.08	245.85	248.65	251	-	-
EBT	669	669	1.052	725	725	733.27	741.63	750.08	758.63	767.28	776.03	784.88	793.83	802.88	812.03	821	-	-
WBT	784	784	1.052	825	825	834.41	843.92	853.54	863.27	873.11	883.06	893.13	903.31	913.61	924.03	935	-	-
WBR	140	144	1.052	151	151	152.72	154.46	156.22	158.00	159.80	161.62	163.46	165.32	167.20	169.11	171	-	-
SBL	204	210	1.052	221	221	223.52	226.07	228.65	231.26	233.90	236.57	239.27	242.00	244.76	247.55	250	-	-
SBR	106	109	1.052	115	115	116.31	117.64	118.98	120.34	121.71	123.10	124.50	125.92	127.36	128.81	130	-	-
4: Lowell Road at County Road (N)																		
4:45 PM																		
(C)																		
WBL	2	2	1.052	2	2	2.02	2.04	2.06	2.08	2.10	2.12	2.14	2.16	2.18	2.20	2	0%	0%
WBR	31	32	1.052	34	34	34.39	34.78	35.18	35.58	35.99	36.40	36.81	37.23	37.65	38.08	39	0%	0%
NBT	899	926	1.052	974	974	985.10	996.33	1007.69	1019.18	1030.80	1042.55	1054.44	1066.46	1078.62	1090.92	1103	1%	1%
NBR	6	6	1.052	6	6	6.07	6.14	6.21	6.28	6.35	6.42	6.49	6.56	6.63	6.71	7	0%	0%
SBL	46	47	1.052	49	49	49.56	50.12	50.69	51.27	51.85	52.44	53.04	53.64	54.25	54.87	55	0%	0%
SBT	732	754	1.052	793	793	802.04	811.18	820.43	829.78	839.24	848.81	858.49	868.28	878.18	888.19	898	1%	1%
5: Lowell Road at Prop. Site Drive																		
4:45 PM																		
calculated																		
EBL			1.052														0%	0%
EBR			1.052														0%	0%
NBL	948	976	1.052	1026	1028	1039.72	1051.57	1063.55	1075.68	1087.95	1100.35	1112.89	1125.58	1138.41	1151.38	1164	1%	1%
NBT	732	754	1.052	793	793	802.04	811.18	820.43	829.78	839.24	848.80	858.48	868.27	878.17	888.18	898	1%	1%
SBT																	0%	0%
SBR																	0%	0%

PM Peak data

NRPC Growth Rate (2020-2030) 0.0114 North of Atwood Ave
 NRPC Growth Rate (2020-2030) 0.0113 South of Atwood Ave
 May 2019 Seasonal Adjust 1.03 NHDOT Group 4 Averages
 Covid/Stay-home factor 1.052 NHDOT Methodology

Site Trips are not Seasonally Adjusted or Grown.
ALL TRIPS ARE COVID ADJUSTED

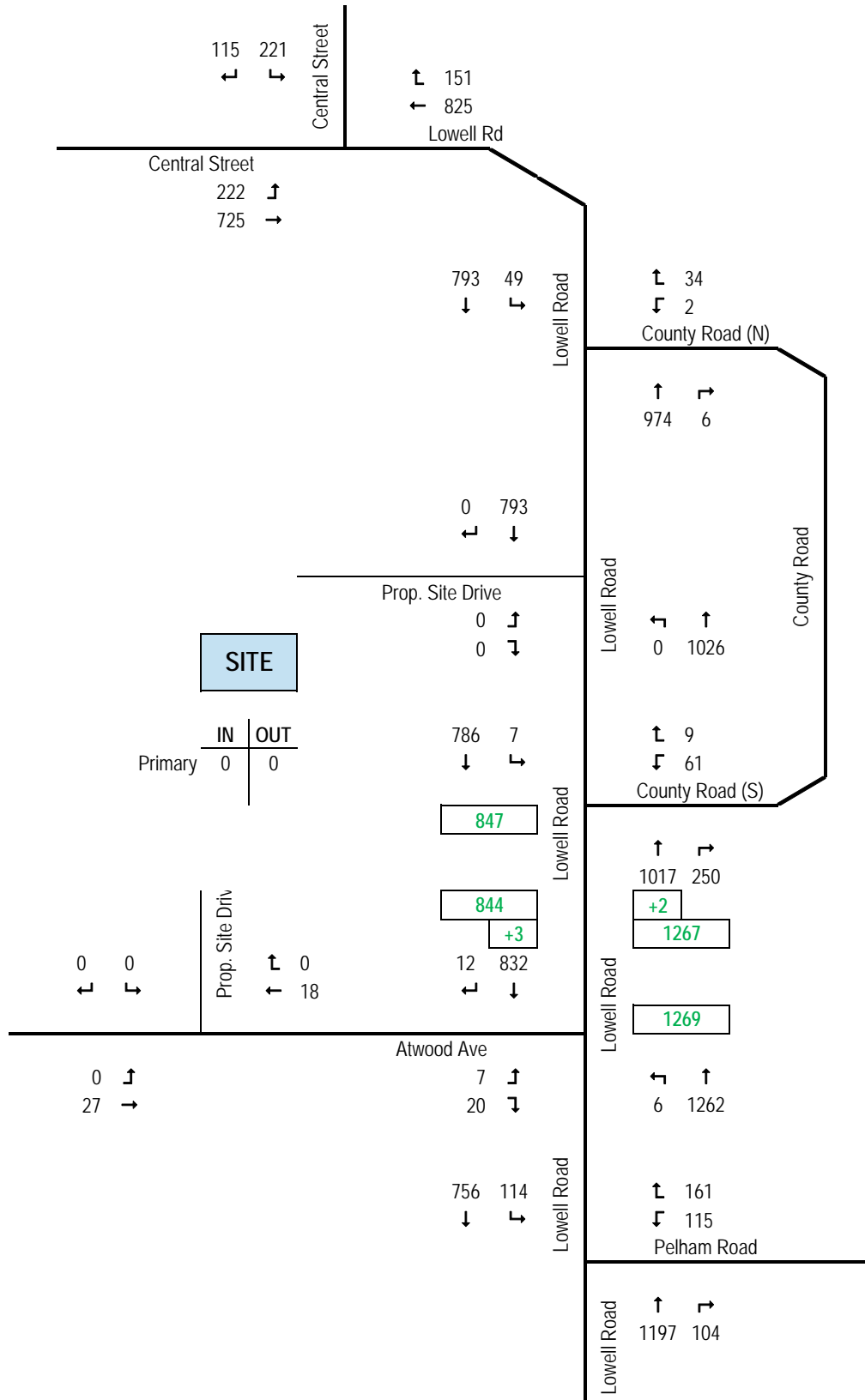
PM Peak Hour	Existing 2023 (Raw data)	Existing 2023 w/ Seasonal Adjustment	Covid/Stay Home Adjustment	2023 ADJUSTE D	2023 BASE	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	Counted Heavy	% Heavy	PM PHF
6: Lowell Road at County Road (S)																			
	4:45 PM																		
	Movement	(B)																	
	WBL	58	1.052	61	61	61.70	62.40	63.11	63.83	64.56	65.30	66.04	66.79	67.55	68.32	69	2%	0.81	1
	WBR	9	1.052	9	9	9.10	9.20	9.30	9.41	9.52	9.63	9.74	9.85	9.96	10.07	10	0%		0
	NBT	939	1.052	1017	+2	1030.62	1042.37	1054.25	1066.27	1078.43	1090.72	1103.15	1115.73	1128.45	1141.31	1154	1%	0.94	12
	NBR	231	1.052	250		252.85	255.73	258.65	261.60	264.58	267.60	270.65	273.74	276.86	280.02	283	2%		2
	SBL	7	1.052	7		7.08	7.16	7.24	7.32	7.40	7.48	7.57	7.66	7.75	7.84	8	0%		0
	SBT	725	1.052	786		794.96	804.02	813.19	822.46	831.84	841.32	850.91	860.61	870.42	880.34	890	1%	0.92	7
7: Atwood Lane at Prop. Site Drive																			
	4:45 PM																		
	Movement	calculated																	
	EBL	26	1.052	27	27	27	27	27	27	27	27	27	27	27	27	27	0%	0.90	0
	EBT	17	1.052	18	18	18	18	18	18	18	18	18	18	18	18	18	0%	0.90	0
	WBT																0%		
	WBR																0%		
	SBL																0%		
	SBR																0%		
8: Lowell Road at Atwood Ave																			
	4:45 PM																		
	Movement	(A)																	
	EBL	7	1.052	7	7	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7	0%	0.54	0
	EBR	19	1.052	20	20	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20	0%		0
	NBL	6	1.052	6	6	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6	0%	0.92	0
	NBT	1165	1.052	1262	+3	1276.39	1290.94	1305.66	1320.54	1335.59	1350.82	1366.22	1381.79	1397.54	1413.47	1430	1%	0.92	12
	SBT	768	1.052	832		844.52	854.15	863.89	873.74	883.70	893.77	903.96	914.27	924.69	935.23	946	1%	0.91	9
	SBR	11	1.052	12		12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12	0%		0
9: Lowell Road at Pelham Road																			
	4:45 PM																		
	Movement	town counts																	
	WBL	106	1.052	115	115	116.30	117.61	118.94	120.28	121.64	123.01	124.40	125.81	127.23	128.67	130	-	0.90	-
	WBR	149	1.052	161	161	162.82	164.66	166.52	168.40	170.30	172.22	174.17	176.14	178.13	180.14	182	-		-
	NBT	1105	1.052	1197	1197	1210.53	1224.21	1238.04	1252.03	1266.18	1280.49	1294.96	1309.59	1324.39	1339.36	1354	-	0.90	-
	NBR	96	1.052	104	104	105.18	106.37	107.57	108.79	110.02	111.26	112.52	113.79	115.08	116.38	118	-		-
	SBL	105	1.052	114	114	115.29	116.59	117.91	119.24	120.59	121.95	123.33	124.72	126.13	127.56	129	-	0.90	-
	SBT	698	1.052	756	756	764.54	773.18	781.92	790.76	799.70	808.74	817.88	827.12	836.47	845.92	855	-		-

PM Peak Hour	2023 BASE	2024	Other Development \$	2024 No-Build	Site Trip Distribution	2024 Build	PM Peak Hour	2034	Other Development \$	2034 No-Build	Site Trip Distribution	2034 Build
3: Lowell Road at Central Street												
EBL	222	225	0	225	0	225	EBL	251	0	251	0	251
EBT	725	733	55	788	13	801	EBT	821	55	876	13	889
WBT	825	834	65	899	14	913	WBT	935	65	1000	14	1014
WBR	151	153	0	153	3	156	WBR	171	0	171	3	174
SBL	221	224	0	224	4	228	SBL	250	0	250	4	254
SBR	115	116	0	116	0	116	SBR	130	0	130	0	130
4: Lowell Road at County Road (N)												
WBL	2	2	0	2	0	2	WBL	2	0	2	0	2
WBR	34	34	0	34	0	34	WBR	39	0	39	0	39
NBT	974	985	65	1050	16	1066	NBT	1103	65	1168	16	1184
NBR	6	6	0	6	0	6	NBR	7	0	7	0	7
SBL	49	50	0	50	0	50	SBL	55	0	55	0	55
SBT	793	802	55	857	16	873	SBT	898	55	953	16	969
5: Lowell Road at Prop. Site Drive												
EBL	0	0	0	0	77	77	EBL	0	0	0	77	77
EBR	0	0	0	0	68	68	EBR	0	0	0	68	68
NBL	0	0	0	0	82	82	NBL	0	0	0	82	82
NBT	1028	1040	65	1105	-61	1044	NBT	1164	65	1229	-61	1168
SBT	793	802	55	857	-48	809	SBT	898	55	953	-48	905
SBR	0	0	0	0	64	64	SBR	0	0	0	64	64

PM Peak Hour	2023 BASE	2024	Other Development \$	2024 No-Build	Site Trip Distribution	2024 Build	PM Peak Hour	2024	Other Development \$	2024 No-Build	Site Trip Distribution	2024 Build
6: Lowell Road at County Road (S)												
WBL	61	62	0	62	0	62	WBL	0	0	69	0	69
WBR	9	9	0	9	0	9	WBR	10	0	10	0	10
NBT	1019	1031	65	1096	21	1117	NBT	1154	65	1219	21	1240
NBR	250	253	0	253	0	253	NBR	283	0	283	0	283
SBL	7	7	0	7	0	7	SBL	8	0	8	0	8
SBT	786	795	55	850	20	870	SBT	890	55	945	20	965
7: Atwood Lane at Prop. Site Drive												
EBL	0	0	0	0	1	1	EBL	0	0	0	1	1
EBT	27	27	0	27	0	27	EBT	27	0	27	0	27
WBT	18	18	0	18	0	18	WBT	18	0	18	0	18
WBR	0	0	0	0	0	0	WBR	0	0	0	0	0
SBL	0	0	0	0	2	2	SBL	0	0	0	2	2
SBR	0	0	0	0	0	0	SBR	0	0	0	0	0
8: Lowell Road at Atwood Ave												
EBL	7	7	0	7	1	8	EBL	7	0	7	1	8
EBR	20	20	0	20	1	21	EBR	20	0	20	1	21
NBL	6	6	0	6	0	6	NBL	6	0	6	0	6
NBT	1262	1276	65	1341	20	1361	NBT	1430	65	1495	20	1515
SBT	835	845	55	900	20	920	SBT	946	55	1001	20	1021
SBR	12	12	0	12	0	12	SBR	12	0	12	0	12
9: Lowell Road at Pelham Road												
WBL	115	116	0	116	0	116	WBL	130	0	130	0	130
WBR	161	163	0	163	3	166	WBR	182	0	182	3	185
NBT	1197	1211	65	1276	17	1293	NBT	1354	65	1419	17	1436
NBR	104	105	0	105	0	105	NBR	118	0	118	0	118
SBL	114	115	0	115	3	118	SBL	129	0	129	3	132
SBT	756	765	55	820	18	838	SBT	855	55	910	18	928

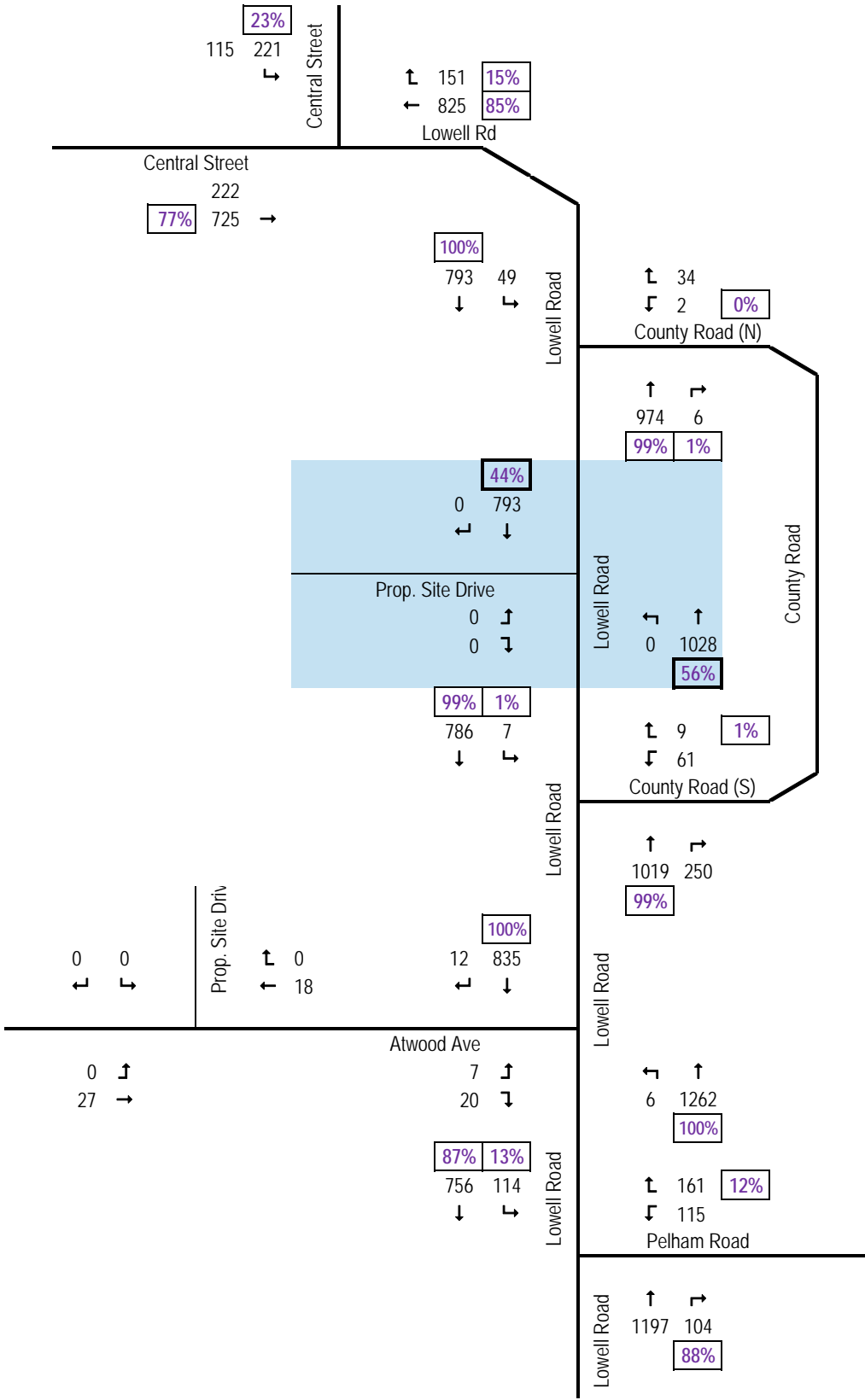
2023 ADJUSTED
BALANCE
PM Peak Hour

XX Volumes



2023 BASE
PRORATA
 PM Peak Hour













XX Volumes



APPENDIX F







Lanes, Volumes, Timings
3: Central Street & Lowell Road

AM 2023 BASE

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	124	703	500	136	253	141
Future Volume (vph)	124	703	500	136	253	141
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	14	12	12
Storage Length (ft)	300			80	0	120
Storage Lanes	1			1	1	0
Taper Length (ft)	50				50	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1863	1863	1689	1770	1583
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1863	1863	1689	1770	1583
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				160		188
Link Speed (mph)		30	30		30	
Link Distance (ft)		688	860		450	
Travel Time (s)		15.6	19.5		10.2	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.75	0.75
Adj. Flow (vph)	146	827	588	160	337	188
Shared Lane Traffic (%)						
Lane Group Flow (vph)	146	827	588	160	337	188
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	0.92	1.00	1.00
Turning Speed (mph)	15			9	15	9
Turn Type	Prot	NA	NA	pm+ov	Prot	pm+ov
Protected Phases	1	2	2	3	3	1
Permitted Phases		1		2		3
Detector Phase	1	2	2	3	3	1
Switch Phase						
Minimum Initial (s)	8.0	10.0	10.0	10.0	10.0	8.0
Minimum Split (s)	20.0	24.0	24.0	24.0	24.0	20.0
Total Split (s)	20.0	60.0	60.0	25.0	25.0	20.0
Total Split (%)	19.0%	57.1%	57.1%	23.8%	23.8%	19.0%
Yellow Time (s)	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
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag			Lead
Lead-Lag Optimize?	Yes	Yes	Yes			Yes
Recall Mode	None	None	None	None	None	None
v/c Ratio	0.54	0.68	0.69	0.12	0.77	0.23
Control Delay	44.4	11.8	22.9	0.7	46.8	3.8

Lanes, Volumes, Timings
 3: Central Street & Lowell Road

AM 2023 BASE

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.4	11.8	22.9	0.7	46.8	3.8
Queue Length 50th (ft)	73	238	238	0	167	0
Queue Length 95th (ft)	147	303	334	11	#293	22
Internal Link Dist (ft)		608	780		370	
Turn Bay Length (ft)	300			80		120
Base Capacity (vph)	342	1607	1263	1319	450	869
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	0.43	0.51	0.47	0.12	0.75	0.22

Intersection Summary

Area Type: Other
 Cycle Length: 105
 Actuated Cycle Length: 85
 Natural Cycle: 70
 Control Type: Actuated-Uncoordinated
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.













Splits and Phases: 3: Central Street & Lowell Road



HCM Signalized Intersection Capacity Analysis











3: Central Street & Lowell Road

AM 2023 BASE

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	124	703	500	136	253	141
Future Volume (vph)	124	703	500	136	253	141
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	14	12	12
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1863	1863	1689	1770	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	1863	1863	1689	1770	1583
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.75	0.75
Adj. Flow (vph)	146	827	588	160	337	188
RTOR Reduction (vph)	0	0	0	47	0	113
Lane Group Flow (vph)	146	827	588	113	337	75
Turn Type	Prot	NA	NA	pm+ov	Prot	pm+ov
Protected Phases	1	2	2	3	3	1
Permitted Phases		1		2		3
Actuated Green, G (s)	10.9	47.5	36.6	55.5	18.9	29.8
Effective Green, g (s)	12.9	51.5	38.6	59.5	20.9	33.8
Actuated g/C Ratio	0.15	0.61	0.46	0.70	0.25	0.40
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	1.5	2.5	2.5	2.5	2.5	1.5
Lane Grp Cap (vph)	270	1225	852	1270	438	708
v/s Ratio Prot	0.08	c0.31	0.32	0.02	c0.19	0.02
v/s Ratio Perm		0.14		0.04		0.03
v/c Ratio	0.54	0.68	0.69	0.09	0.77	0.11
Uniform Delay, d1	33.0	10.9	18.2	3.9	29.5	15.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.2	1.3	2.2	0.0	7.6	0.0
Delay (s)	34.2	12.3	20.4	3.9	37.1	15.9
Level of Service	C	B	C	A	D	B
Approach Delay (s)		15.5	16.9		29.5	
Approach LOS		B	B		C	
Intersection Summary						
HCM 2000 Control Delay			19.3		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.74			
Actuated Cycle Length (s)			84.4		Sum of lost time (s)	12.0
Intersection Capacity Utilization			57.7%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						

Lanes, Volumes, Timings
4: Lowell Road & County Road (N)

AM 2023 BASE

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	4	32	575	6	28	952
Future Volume (vph)	4	32	575	6	28	952
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	50	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.880		0.999			
Flt Protected	0.994				0.950	
Satd. Flow (prot)	1616	0	1792	0	1626	1827
Flt Permitted	0.994				0.950	
Satd. Flow (perm)	1616	0	1792	0	1626	1827
Link Speed (mph)	30		30			30
Link Distance (ft)	1120		950			1800
Travel Time (s)	25.5		21.6			40.9
Peak Hour Factor	0.83	0.83	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	25%	0%	6%	0%	11%	4%
Adj. Flow (vph)	5	39	646	7	31	1070
Shared Lane Traffic (%)						
Lane Group Flow (vph)	44	0	653	0	31	1070
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free











Intersection Summary

Area Type: Other
Control Type: Unsignalized

HCM Unsignalized Intersection Capacity Analysis











4: Lowell Road & County Road (N)

AM 2023 BASE

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	4	32	575	6	28	952
Future Volume (Veh/h)	4	32	575	6	28	952
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.83	0.83	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	5	39	646	7	31	1070
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL		TWLTL	
Median storage (veh)			2		2	
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1782	650			653	
vC1, stage 1 conf vol	650					
vC2, stage 2 conf vol	1132					
vCu, unblocked vol	1782	650			653	
tC, single (s)	6.6	6.2			4.2	
tC, 2 stage (s)	5.6					
tF (s)	3.7	3.3			2.3	
p0 queue free %	98	92			97	
cM capacity (veh/h)	237	473			892	
Direction, Lane #	WB 1	NB 1	SB 1	SB 2		
Volume Total	44	653	31	1070		
Volume Left	5	0	31	0		
Volume Right	39	7	0	0		
cSH	425	1700	892	1700		
Volume to Capacity	0.10	0.38	0.03	0.63		
Queue Length 95th (ft)	9	0	3	0		
Control Delay (s)	14.5	0.0	9.2	0.0		
Lane LOS	B		A			
Approach Delay (s)	14.5	0.0	0.3			
Approach LOS	B					
Intersection Summary						
Average Delay			0.5			
Intersection Capacity Utilization			60.1%		ICU Level of Service	B
Analysis Period (min)			15			

Lanes, Volumes, Timings
6: Lowell Road & County Road (S)

AM 2023 BASE

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	104	9	559	106	14	997
Future Volume (vph)	104	9	559	106	14	997
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	50	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.989		0.979			
Flt Protected	0.956				0.950	
Satd. Flow (prot)	1780	0	1780	0	1583	1827
Flt Permitted	0.956				0.950	
Satd. Flow (perm)	1780	0	1780	0	1583	1827
Link Speed (mph)	30		30			30
Link Distance (ft)	940		200			200
Travel Time (s)	21.4		4.5			4.5
Peak Hour Factor	0.88	0.88	0.92	0.92	0.88	0.88
Heavy Vehicles (%)	1%	0%	5%	2%	14%	4%
Adj. Flow (vph)	118	10	608	115	16	1133
Shared Lane Traffic (%)						
Lane Group Flow (vph)	128	0	723	0	16	1133
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free











Intersection Summary

Area Type: Other
Control Type: Unsignalized

HCM Unsignalized Intersection Capacity Analysis











6: Lowell Road & County Road (S)

AM 2023 BASE

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	104	9	559	106	14	997
Future Volume (Veh/h)	104	9	559	106	14	997
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.88	0.88	0.92	0.92	0.88	0.88
Hourly flow rate (vph)	118	10	608	115	16	1133
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh			2			2
Upstream signal (ft)			1300			
pX, platoon unblocked	0.77	0.77			0.77	
vC, conflicting volume	1830	666			723	
vC1, stage 1 conf vol	666					
vC2, stage 2 conf vol	1165					
vCu, unblocked vol	1931	413			488	
tC, single (s)	6.4	6.2			4.2	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.3	
p0 queue free %	53	98			98	
cM capacity (veh/h)	250	494			780	
Direction, Lane #	WB 1	NB 1	SB 1	SB 2		
Volume Total	128	723	16	1133		
Volume Left	118	0	16	0		
Volume Right	10	115	0	0		
cSH	260	1700	780	1700		
Volume to Capacity	0.49	0.43	0.02	0.67		
Queue Length 95th (ft)	63	0	2	0		
Control Delay (s)	31.5	0.0	9.7	0.0		
Lane LOS	D		A			
Approach Delay (s)	31.5	0.0	0.1			
Approach LOS	D					
Intersection Summary						
Average Delay			2.1			
Intersection Capacity Utilization			65.4%		ICU Level of Service	C
Analysis Period (min)			15			

Lanes, Volumes, Timings
8: Lowell Road & Atwood Ave

AM 2023 BASE











						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	18	14	13	633	1073	28
Future Volume (vph)	18	14	13	633	1073	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	50			0
Storage Lanes	1	0	1			0
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.940				0.997	
Flt Protected	0.973		0.950			
Satd. Flow (prot)	1738	0	1805	1827	1840	0
Flt Permitted	0.973		0.950			
Satd. Flow (perm)	1738	0	1805	1827	1840	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	410			1100	200	
Travel Time (s)	9.3			25.0	4.5	
Peak Hour Factor	0.75	0.75	0.97	0.97	0.88	0.88
Heavy Vehicles (%)	0%	0%	0%	4%	3%	0%
Adj. Flow (vph)	24	19	13	653	1219	32
Shared Lane Traffic (%)						
Lane Group Flow (vph)	43	0	13	653	1251	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane				Yes	Yes	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized












HCM Unsignalized Intersection Capacity Analysis
 8: Lowell Road & Atwood Ave

AM 2023 BASE

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	18	14	13	633	1073	28
Future Volume (Veh/h)	18	14	13	633	1073	28
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.75	0.75	0.97	0.97	0.88	0.88
Hourly flow rate (vph)	24	19	13	653	1219	32
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh				2	2	
Upstream signal (ft)				1100		
pX, platoon unblocked	0.75					
vC, conflicting volume	1914	1235	1251			
vC1, stage 1 conf vol	1235					
vC2, stage 2 conf vol	679					
vCu, unblocked vol	2049	1235	1251			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.2			
p0 queue free %	90	91	98			
cM capacity (veh/h)	237	217	563			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1		
Volume Total	43	13	653	1251		
Volume Left	24	13	0	0		
Volume Right	19	0	0	32		
cSH	228	563	1700	1700		
Volume to Capacity	0.19	0.02	0.38	0.74		
Queue Length 95th (ft)	17	2	0	0		
Control Delay (s)	24.4	11.5	0.0	0.0		
Lane LOS	C	B				
Approach Delay (s)	24.4	0.2		0.0		
Approach LOS	C					
Intersection Summary						
Average Delay			0.6			
Intersection Capacity Utilization			68.2%		ICU Level of Service	C
Analysis Period (min)			15			

Lanes, Volumes, Timings
9: Lowell Road & Pelham Road

AM 2023 BASE

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	205	103	686	88	88	972
Future Volume (vph)	205	103	686	88	88	972
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	12	12	12	12
Storage Length (ft)	0	100		0	160	
Storage Lanes	1	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850	0.985			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1794	1835	0	1770	1863
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1794	1835	0	1770	1863
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		87	11			
Link Speed (mph)	30		30			30
Link Distance (ft)	1206		847			1100
Travel Time (s)	27.4		19.3			25.0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	228	114	762	98	98	1080
Shared Lane Traffic (%)						
Lane Group Flow (vph)	228	114	860	0	98	1080
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						Yes
Headway Factor	1.00	0.85	1.00	1.00	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
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)	20.0		24.0		10.0	24.0
Total Split (s)	30.0		100.0		10.0	110.0
Total Split (%)	21.4%		71.4%		7.1%	78.6%
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)	-2.0		-2.0		-2.0	-2.0
Total Lost Time (s)	4.0		4.0		4.0	4.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		C-Min		None	C-Min
v/c Ratio	0.79	0.19	0.73		0.49	0.74
Control Delay	76.1	12.1	21.5		67.0	12.7

Lanes, Volumes, Timings
 9: Lowell Road & Pelham Road

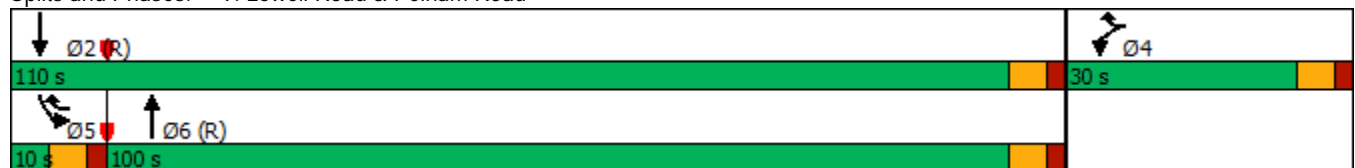
AM 2023 BASE

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	76.1	12.1	21.5		67.0	12.7
Queue Length 50th (ft)	200	17	521		84	461
Queue Length 95th (ft)	292	69	567		#236	686
Internal Link Dist (ft)	1126		767			1020
Turn Bay Length (ft)		100			160	
Base Capacity (vph)	330	601	1261		200	1456
Starvation Cap Reductn	0	0	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.69	0.19	0.68		0.49	0.74

Intersection Summary

Area Type: Other
 Cycle Length: 140
 Actuated Cycle Length: 140
 Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Green
 Natural Cycle: 70
 Control Type: Actuated-Coordinated
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.












Splits and Phases: 9: Lowell Road & Pelham Road



HCM Signalized Intersection Capacity Analysis













9: Lowell Road & Pelham Road

AM 2023 BASE

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	205	103	686	88	88	972
Future Volume (vph)	205	103	686	88	88	972
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	0.98		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	1794	1834		1770	1863
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1770	1794	1834		1770	1863
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	228	114	762	98	98	1080
RTOR Reduction (vph)	0	61	4	0	0	0
Lane Group Flow (vph)	228	53	856	0	98	1080
Turn Type	Prot	pt+ov	NA		Prot	NA
Protected Phases	4	4 5	6		5	2
Permitted Phases						
Actuated Green, G (s)	20.7	40.6	87.4		13.9	107.3
Effective Green, g (s)	22.7	42.6	89.4		15.9	109.3
Actuated g/C Ratio	0.16	0.30	0.64		0.11	0.78
Clearance Time (s)	6.0		6.0		6.0	6.0
Vehicle Extension (s)	1.5		1.5		1.5	1.5
Lane Grp Cap (vph)	286	545	1171		201	1454
v/s Ratio Prot	c0.13	0.03	0.47		0.06	c0.58
v/s Ratio Perm						
v/c Ratio	0.80	0.10	0.73		0.49	0.74
Uniform Delay, d1	56.4	34.9	17.1		58.2	8.0
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	13.4	0.0	4.0		0.7	3.5
Delay (s)	69.8	35.0	21.2		58.9	11.5
Level of Service	E	C	C		E	B
Approach Delay (s)	58.2		21.2			15.4
Approach LOS	E		C			B
Intersection Summary						
HCM 2000 Control Delay			23.7		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.77			
Actuated Cycle Length (s)			140.0		Sum of lost time (s)	12.0
Intersection Capacity Utilization			69.2%		ICU Level of Service	C
Analysis Period (min)			15			
c Critical Lane Group						







Lanes, Volumes, Timings
3: Central Street & Lowell Road

AM 2024 NoBUILD

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	127	757	546	139	258	144
Future Volume (vph)	127	757	546	139	258	144
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	14	12	12
Storage Length (ft)	300			80	0	120
Storage Lanes	1			1	1	0
Taper Length (ft)	50				50	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1863	1863	1689	1770	1583
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1863	1863	1689	1770	1583
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				161		192
Link Speed (mph)		30	30		30	
Link Distance (ft)		688	860		450	
Travel Time (s)		15.6	19.5		10.2	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.75	0.75
Adj. Flow (vph)	149	891	642	164	344	192
Shared Lane Traffic (%)						
Lane Group Flow (vph)	149	891	642	164	344	192
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	0.92	1.00	1.00
Turning Speed (mph)	15			9	15	9
Turn Type	Prot	NA	NA	pm+ov	Prot	pm+ov
Protected Phases	1	2	2	3	3	1
Permitted Phases		1		2		3
Detector Phase	1	2	2	3	3	1
Switch Phase						
Minimum Initial (s)	8.0	10.0	10.0	10.0	10.0	8.0
Minimum Split (s)	20.0	24.0	24.0	24.0	24.0	20.0
Total Split (s)	20.0	60.0	60.0	25.0	25.0	20.0
Total Split (%)	19.0%	57.1%	57.1%	23.8%	23.8%	19.0%
Yellow Time (s)	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
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag			Lead
Lead-Lag Optimize?	Yes	Yes	Yes			Yes
Recall Mode	None	None	None	None	None	None
v/c Ratio	0.57	0.72	0.72	0.12	0.81	0.24
Control Delay	47.5	12.7	23.8	0.7	52.2	4.0

Lanes, Volumes, Timings
 3: Central Street & Lowell Road

AM 2024 NoBUILD

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.5	12.7	23.8	0.7	52.2	4.0
Queue Length 50th (ft)	81	273	276	0	189	0
Queue Length 95th (ft)	150	347	378	11	#302	22
Internal Link Dist (ft)		608	780		370	
Turn Bay Length (ft)	300			80		120
Base Capacity (vph)	323	1551	1191	1324	424	843
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	0.46	0.57	0.54	0.12	0.81	0.23

Intersection Summary

Area Type: Other
 Cycle Length: 105
 Actuated Cycle Length: 89.6
 Natural Cycle: 75
 Control Type: Actuated-Uncoordinated
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.













Splits and Phases: 3: Central Street & Lowell Road



HCM Signalized Intersection Capacity Analysis











3: Central Street & Lowell Road

AM 2024 NoBUILD

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	127	757	546	139	258	144
Future Volume (vph)	127	757	546	139	258	144
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	14	12	12
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1863	1863	1689	1770	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	1863	1863	1689	1770	1583
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.75	0.75
Adj. Flow (vph)	149	891	642	164	344	192
RTOR Reduction (vph)	0	0	0	45	0	118
Lane Group Flow (vph)	149	891	642	119	344	74
Turn Type	Prot	NA	NA	pm+ov	Prot	pm+ov
Protected Phases	1	2	2	3	3	1
Permitted Phases		1		2		3
Actuated Green, G (s)	11.2	51.8	40.6	60.0	19.4	30.6
Effective Green, g (s)	13.2	55.8	42.6	64.0	21.4	34.6
Actuated g/C Ratio	0.15	0.63	0.48	0.72	0.24	0.39
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	1.5	2.5	2.5	2.5	2.5	1.5
Lane Grp Cap (vph)	261	1248	889	1287	424	685
v/s Ratio Prot	0.08	c0.34	0.34	0.02	c0.19	0.02
v/s Ratio Perm		0.14		0.05		0.03
v/c Ratio	0.57	0.71	0.72	0.09	0.81	0.11
Uniform Delay, d1	35.4	11.3	18.6	3.8	32.0	17.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.9	1.8	2.7	0.0	11.0	0.0
Delay (s)	37.2	13.1	21.3	3.8	43.0	17.5
Level of Service	D	B	C	A	D	B
Approach Delay (s)		16.6	17.8		33.8	
Approach LOS		B	B		C	
Intersection Summary						
HCM 2000 Control Delay			20.9		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.78			
Actuated Cycle Length (s)			89.2		Sum of lost time (s)	12.0
Intersection Capacity Utilization			60.8%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						

Lanes, Volumes, Timings
4: Lowell Road & County Road (N)

AM 2024 NoBUILD

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	4	33	623	6	29	1011
Future Volume (vph)	4	33	623	6	29	1011
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	50	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.880		0.999			
Flt Protected	0.994				0.950	
Satd. Flow (prot)	1617	0	1792	0	1626	1827
Flt Permitted	0.994				0.950	
Satd. Flow (perm)	1617	0	1792	0	1626	1827
Link Speed (mph)	30		30			30
Link Distance (ft)	1120		950			1800
Travel Time (s)	25.5		21.6			40.9
Peak Hour Factor	0.83	0.83	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	25%	0%	6%	0%	11%	4%
Adj. Flow (vph)	5	40	700	7	33	1136
Shared Lane Traffic (%)						
Lane Group Flow (vph)	45	0	707	0	33	1136
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free











Intersection Summary

Area Type: Other
Control Type: Unsignalized

HCM Unsignalized Intersection Capacity Analysis











4: Lowell Road & County Road (N)

AM 2024 NoBUILD

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	4	33	623	6	29	1011
Future Volume (Veh/h)	4	33	623	6	29	1011
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.83	0.83	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	5	40	700	7	33	1136
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage (veh)			2			2
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1906	704			707	
vC1, stage 1 conf vol	704					
vC2, stage 2 conf vol	1202					
vCu, unblocked vol	1906	704			707	
tC, single (s)	6.6	6.2			4.2	
tC, 2 stage (s)	5.6					
tF (s)	3.7	3.3			2.3	
p0 queue free %	98	91			96	
cM capacity (veh/h)	217	441			851	
Direction, Lane #	WB 1	NB 1	SB 1	SB 2		
Volume Total	45	707	33	1136		
Volume Left	5	0	33	0		
Volume Right	40	7	0	0		
cSH	395	1700	851	1700		
Volume to Capacity	0.11	0.42	0.04	0.67		
Queue Length 95th (ft)	10	0	3	0		
Control Delay (s)	15.3	0.0	9.4	0.0		
Lane LOS	C		A			
Approach Delay (s)	15.3	0.0	0.3			
Approach LOS	C					
Intersection Summary						
Average Delay			0.5			
Intersection Capacity Utilization			63.2%		ICU Level of Service	B
Analysis Period (min)			15			

Lanes, Volumes, Timings
6: Lowell Road & County Road (S)

AM 2024 NoBUILD











						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	106	9	607	108	14	1057
Future Volume (vph)	106	9	607	108	14	1057
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	50	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.990		0.980			
Flt Protected	0.956				0.950	
Satd. Flow (prot)	1782	0	1781	0	1583	1827
Flt Permitted	0.956				0.950	
Satd. Flow (perm)	1782	0	1781	0	1583	1827
Link Speed (mph)	30		30			30
Link Distance (ft)	940		200			200
Travel Time (s)	21.4		4.5			4.5
Peak Hour Factor	0.88	0.88	0.92	0.92	0.88	0.88
Heavy Vehicles (%)	1%	0%	5%	2%	14%	4%
Adj. Flow (vph)	120	10	660	117	16	1201
Shared Lane Traffic (%)						
Lane Group Flow (vph)	130	0	777	0	16	1201
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other
Control Type: Unsignalized











HCM Unsignalized Intersection Capacity Analysis
 6: Lowell Road & County Road (S)

AM 2024 NoBUILD

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	106	9	607	108	14	1057
Future Volume (Veh/h)	106	9	607	108	14	1057
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.88	0.88	0.92	0.92	0.88	0.88
Hourly flow rate (vph)	120	10	660	117	16	1201
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage (veh)			2			2
Upstream signal (ft)			1300			
pX, platoon unblocked	0.71	0.71			0.71	
vC, conflicting volume	1952	718			777	
vC1, stage 1 conf vol	718					
vC2, stage 2 conf vol	1233					
vCu, unblocked vol	2135	402			484	
tC, single (s)	6.4	6.2			4.2	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.3	
p0 queue free %	48	98			98	
cM capacity (veh/h)	229	465			725	
Direction, Lane #	WB 1	NB 1	SB 1	SB 2		
Volume Total	130	777	16	1201		
Volume Left	120	0	16	0		
Volume Right	10	117	0	0		
cSH	239	1700	725	1700		
Volume to Capacity	0.54	0.46	0.02	0.71		
Queue Length 95th (ft)	74	0	2	0		
Control Delay (s)	36.8	0.0	10.1	0.0		
Lane LOS	E		B			
Approach Delay (s)	36.8	0.0	0.1			
Approach LOS	E					
Intersection Summary						
Average Delay			2.3			
Intersection Capacity Utilization			68.7%		ICU Level of Service	C
Analysis Period (min)			15			

Lanes, Volumes, Timings
8: Lowell Road & Atwood Ave

AM 2024 NoBUILD

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	18	14	13	682	1134	28
Future Volume (vph)	18	14	13	682	1134	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	50			0
Storage Lanes	1	0	1			0
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.940				0.997	
Flt Protected	0.973		0.950			
Satd. Flow (prot)	1738	0	1805	1827	1840	0
Flt Permitted	0.973		0.950			
Satd. Flow (perm)	1738	0	1805	1827	1840	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	410			1100	200	
Travel Time (s)	9.3			25.0	4.5	
Peak Hour Factor	0.75	0.75	0.97	0.97	0.88	0.88
Heavy Vehicles (%)	0%	0%	0%	4%	3%	0%
Adj. Flow (vph)	24	19	13	703	1289	32
Shared Lane Traffic (%)						
Lane Group Flow (vph)	43	0	13	703	1321	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane				Yes	Yes	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	











Intersection Summary

Area Type: Other
Control Type: Unsignalized

HCM Unsignalized Intersection Capacity Analysis












8: Lowell Road & Atwood Ave

AM 2024 NoBUILD

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	18	14	13	682	1134	28
Future Volume (Veh/h)	18	14	13	682	1134	28
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.75	0.75	0.97	0.97	0.88	0.88
Hourly flow rate (vph)	24	19	13	703	1289	32
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh				2	2	
Upstream signal (ft)				1100		
pX, platoon unblocked	0.70					
vC, conflicting volume	2034	1305	1321			
vC1, stage 1 conf vol	1305					
vC2, stage 2 conf vol	729					
vCu, unblocked vol	2263	1305	1321			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.2			
p0 queue free %	89	90	98			
cM capacity (veh/h)	217	198	530			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1		
Volume Total	43	13	703	1321		
Volume Left	24	13	0	0		
Volume Right	19	0	0	32		
cSH	208	530	1700	1700		
Volume to Capacity	0.21	0.02	0.41	0.78		
Queue Length 95th (ft)	19	2	0	0		
Control Delay (s)	26.7	12.0	0.0	0.0		
Lane LOS	D	B				
Approach Delay (s)	26.7	0.2		0.0		
Approach LOS	D					
Intersection Summary						
Average Delay			0.6			
Intersection Capacity Utilization			71.4%		ICU Level of Service	C
Analysis Period (min)			15			

Lanes, Volumes, Timings
9: Lowell Road & Pelham Road

AM 2024 NoBUILD

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	209	105	736	90	90	1031
Future Volume (vph)	209	105	736	90	90	1031
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	12	12	12	12
Storage Length (ft)	0	100		0	160	
Storage Lanes	1	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850	0.985			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1794	1835	0	1770	1863
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1794	1835	0	1770	1863
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		87	10			
Link Speed (mph)	30		30			30
Link Distance (ft)	1206		847			1100
Travel Time (s)	27.4		19.3			25.0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	232	117	818	100	100	1146
Shared Lane Traffic (%)						
Lane Group Flow (vph)	232	117	918	0	100	1146
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						Yes
Headway Factor	1.00	0.85	1.00	1.00	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
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)	20.0		24.0		10.0	24.0
Total Split (s)	30.0		100.0		10.0	110.0
Total Split (%)	21.4%		71.4%		7.1%	78.6%
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)	-2.0		-2.0		-2.0	-2.0
Total Lost Time (s)	4.0		4.0		4.0	4.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		C-Min		None	C-Min
v/c Ratio	0.80	0.19	0.79		0.49	0.79
Control Delay	76.2	12.5	24.5		66.6	14.9

Lanes, Volumes, Timings
 9: Lowell Road & Pelham Road

AM 2024 NoBUILD

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	76.2	12.5	24.5		66.6	14.9
Queue Length 50th (ft)	204	19	602		86	543
Queue Length 95th (ft)	296	71	647		#240	806
Internal Link Dist (ft)	1126		767			1020
Turn Bay Length (ft)		100			160	
Base Capacity (vph)	331	608	1261		204	1453
Starvation Cap Reductn	0	0	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.70	0.19	0.73		0.49	0.79

Intersection Summary












Area Type: Other
 Cycle Length: 140
 Actuated Cycle Length: 140
 Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Green
 Natural Cycle: 75
 Control Type: Actuated-Coordinated
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 9: Lowell Road & Pelham Road















HCM Signalized Intersection Capacity Analysis
 9: Lowell Road & Pelham Road

AM 2024 NoBUILD

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	209	105	736	90	90	1031
Future Volume (vph)	209	105	736	90	90	1031
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	0.99		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	1794	1835		1770	1863
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1770	1794	1835		1770	1863
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	232	117	818	100	100	1146
RTOR Reduction (vph)	0	60	4	0	0	0
Lane Group Flow (vph)	232	57	914	0	100	1146
Turn Type	Prot	pt+ov	NA		Prot	NA
Protected Phases	4	4 5	6		5	2
Permitted Phases						
Actuated Green, G (s)	21.0	41.2	86.8		14.2	107.0
Effective Green, g (s)	23.0	43.2	88.8		16.2	109.0
Actuated g/C Ratio	0.16	0.31	0.63		0.12	0.78
Clearance Time (s)	6.0		6.0		6.0	6.0
Vehicle Extension (s)	1.5		1.5		1.5	1.5
Lane Grp Cap (vph)	290	553	1163		204	1450
v/s Ratio Prot	c0.13	0.03	0.50		0.06	c0.62
v/s Ratio Perm						
v/c Ratio	0.80	0.10	0.79		0.49	0.79
Uniform Delay, d1	56.3	34.6	18.7		58.0	8.9
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	13.8	0.0	5.4		0.7	4.5
Delay (s)	70.1	34.6	24.1		58.7	13.4
Level of Service	E	C	C		E	B
Approach Delay (s)	58.2		24.1			17.0
Approach LOS	E		C			B
Intersection Summary						
HCM 2000 Control Delay			25.3		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.82			
Actuated Cycle Length (s)			140.0		Sum of lost time (s)	12.0
Intersection Capacity Utilization			72.5%		ICU Level of Service	C
Analysis Period (min)			15			
c Critical Lane Group						







Lanes, Volumes, Timings
3: Central Street & Lowell Road

AM 2034 NoBUILD

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	155	920	662	170	317	177
Future Volume (vph)	155	920	662	170	317	177
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	14	12	12
Storage Length (ft)	300			80	0	120
Storage Lanes	1			1	1	0
Taper Length (ft)	50				50	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1863	1863	1689	1770	1583
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1863	1863	1689	1770	1583
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				162		160
Link Speed (mph)		30	30		30	
Link Distance (ft)		688	860		450	
Travel Time (s)		15.6	19.5		10.2	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.75	0.75
Adj. Flow (vph)	182	1082	779	200	423	236
Shared Lane Traffic (%)						
Lane Group Flow (vph)	182	1082	779	200	423	236
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	0.92	1.00	1.00
Turning Speed (mph)	15			9	15	9
Turn Type	Prot	NA	NA	pm+ov	Prot	pm+ov
Protected Phases	1	2	2	3	3	1
Permitted Phases		1		2		3
Detector Phase	1	2	2	3	3	1
Switch Phase						
Minimum Initial (s)	8.0	10.0	10.0	10.0	10.0	8.0
Minimum Split (s)	20.0	24.0	24.0	24.0	24.0	20.0
Total Split (s)	20.0	60.0	60.0	25.0	25.0	20.0
Total Split (%)	19.0%	57.1%	57.1%	23.8%	23.8%	19.0%
Yellow Time (s)	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
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag			Lead
Lead-Lag Optimize?	Yes	Yes	Yes			Yes
Recall Mode	None	None	None	None	None	None
v/c Ratio	0.71	0.83	0.81	0.15	1.10	0.32
Control Delay	57.3	17.0	28.0	1.0	115.8	8.9

Lanes, Volumes, Timings
 3: Central Street & Lowell Road

AM 2034 NoBUILD

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.3	17.0	28.0	1.0	115.8	8.9
Queue Length 50th (ft)	117	412	400	5	-345	32
Queue Length 95th (ft)	180	526	510	17	#406	56
Internal Link Dist (ft)		608	780		370	
Turn Bay Length (ft)	300			80		120
Base Capacity (vph)	292	1424	1076	1340	383	761
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	0.62	0.76	0.72	0.15	1.10	0.31

Intersection Summary













Area Type: Other
 Cycle Length: 105
 Actuated Cycle Length: 98.1
 Natural Cycle: 90
 Control Type: Actuated-Uncoordinated
 ~ 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: 3: Central Street & Lowell Road



HCM Signalized Intersection Capacity Analysis
 3: Central Street & Lowell Road

AM 2034 NoBUILD











						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	155	920	662	170	317	177
Future Volume (vph)	155	920	662	170	317	177
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	14	12	12
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1863	1863	1689	1770	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	1863	1863	1689	1770	1583
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.75	0.75
Adj. Flow (vph)	182	1082	779	200	423	236
RTOR Reduction (vph)	0	0	0	43	0	102
Lane Group Flow (vph)	182	1082	779	157	423	134
Turn Type	Prot	NA	NA	pm+ov	Prot	pm+ov
Protected Phases	1	2	2	3	3	1
Permitted Phases		1		2		3
Actuated Green, G (s)	12.2	60.6	48.4	67.6	19.2	31.4
Effective Green, g (s)	14.2	64.6	50.4	71.6	21.2	35.4
Actuated g/C Ratio	0.15	0.66	0.52	0.73	0.22	0.36
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	1.5	2.5	2.5	2.5	2.5	1.5
Lane Grp Cap (vph)	256	1306	960	1305	383	637
v/s Ratio Prot	0.10	c0.43	0.42	0.03	c0.24	0.03
v/s Ratio Perm		0.15		0.07		0.05
v/c Ratio	0.71	0.83	0.81	0.12	1.10	0.21
Uniform Delay, d1	39.8	12.4	19.7	3.8	38.3	21.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	7.5	4.4	5.2	0.0	77.2	0.1
Delay (s)	47.4	16.8	24.9	3.9	115.5	21.6
Level of Service	D	B	C	A	F	C
Approach Delay (s)		21.2	20.6		81.9	
Approach LOS		C	C		F	

Intersection Summary

HCM 2000 Control Delay	34.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	97.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	72.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings
 4: Lowell Road & County Road (N)

AM 2034 NoBUILD

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	5	40	756	8	35	1232
Future Volume (vph)	5	40	756	8	35	1232
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	50	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.880		0.999			
Flt Protected	0.994				0.950	
Satd. Flow (prot)	1617	0	1792	0	1626	1827
Flt Permitted	0.994				0.950	
Satd. Flow (perm)	1617	0	1792	0	1626	1827
Link Speed (mph)	30		30			30
Link Distance (ft)	1120		950			1800
Travel Time (s)	25.5		21.6			40.9
Peak Hour Factor	0.83	0.83	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	25%	0%	6%	0%	11%	4%
Adj. Flow (vph)	6	48	849	9	39	1384
Shared Lane Traffic (%)						
Lane Group Flow (vph)	54	0	858	0	39	1384
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free











Intersection Summary

Area Type: Other
 Control Type: Unsignalized

HCM Unsignalized Intersection Capacity Analysis











4: Lowell Road & County Road (N)

AM 2034 NoBUILD

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	5	40	756	8	35	1232
Future Volume (Veh/h)	5	40	756	8	35	1232
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.83	0.83	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	6	48	849	9	39	1384
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage (veh)			2			2
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2316	854			858	
vC1, stage 1 conf vol	854					
vC2, stage 2 conf vol	1462					
vCu, unblocked vol	2316	854			858	
tC, single (s)	6.6	6.2			4.2	
tC, 2 stage (s)	5.6					
tF (s)	3.7	3.3			2.3	
p0 queue free %	96	87			95	
cM capacity (veh/h)	159	362			746	
Direction, Lane #	WB 1	NB 1	SB 1	SB 2		
Volume Total	54	858	39	1384		
Volume Left	6	0	39	0		
Volume Right	48	9	0	0		
cSH	317	1700	746	1700		
Volume to Capacity	0.17	0.50	0.05	0.81		
Queue Length 95th (ft)	15	0	4	0		
Control Delay (s)	18.7	0.0	10.1	0.0		
Lane LOS	C		B			
Approach Delay (s)	18.7	0.0	0.3			
Approach LOS	C					
Intersection Summary						
Average Delay			0.6			
Intersection Capacity Utilization			74.8%		ICU Level of Service	D
Analysis Period (min)			15			

Lanes, Volumes, Timings
6: Lowell Road & County Road (S)

AM 2034 NoBUILD











						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	130	11	736	133	18	1288
Future Volume (vph)	130	11	736	133	18	1288
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	50	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.989		0.979			
Flt Protected	0.956				0.950	
Satd. Flow (prot)	1780	0	1779	0	1583	1827
Flt Permitted	0.956				0.950	
Satd. Flow (perm)	1780	0	1779	0	1583	1827
Link Speed (mph)	30		30			30
Link Distance (ft)	940		200			200
Travel Time (s)	21.4		4.5			4.5
Peak Hour Factor	0.88	0.88	0.92	0.92	0.88	0.88
Heavy Vehicles (%)	1%	0%	5%	2%	14%	4%
Adj. Flow (vph)	148	13	800	145	20	1464
Shared Lane Traffic (%)						
Lane Group Flow (vph)	161	0	945	0	20	1464
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other
Control Type: Unsignalized











HCM Unsignalized Intersection Capacity Analysis
6: Lowell Road & County Road (S)

AM 2034 NoBUILD

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	130	11	736	133	18	1288
Future Volume (Veh/h)	130	11	736	133	18	1288
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.88	0.88	0.92	0.92	0.88	0.88
Hourly flow rate (vph)	148	12	800	145	20	1464
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh			2			2
Upstream signal (ft)			1300			
pX, platoon unblocked	0.58	0.58			0.58	
vC, conflicting volume	2376	872			945	
vC1, stage 1 conf vol	872					
vC2, stage 2 conf vol	1504					
vCu, unblocked vol	3016	415			540	
tC, single (s)	6.4	6.2			4.2	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.3	
p0 queue free %	11	97			96	
cM capacity (veh/h)	166	371			561	
Direction, Lane #	WB 1	NB 1	SB 1	SB 2		
Volume Total	160	945	20	1464		
Volume Left	148	0	20	0		
Volume Right	12	145	0	0		
cSH	173	1700	561	1700		
Volume to Capacity	0.92	0.56	0.04	0.86		
Queue Length 95th (ft)	174	0	3	0		
Control Delay (s)	103.3	0.0	11.7	0.0		
Lane LOS	F		B			
Approach Delay (s)	103.3	0.0	0.2			
Approach LOS	F					
Intersection Summary						
Average Delay			6.5			
Intersection Capacity Utilization			82.3%		ICU Level of Service	E
Analysis Period (min)			15			

Lanes, Volumes, Timings
8: Lowell Road & Atwood Ave

AM 2034 NoBUILD

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	18	14	13	829	1383	28
Future Volume (vph)	18	14	13	829	1383	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	50			0
Storage Lanes	1	0	1			0
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.940				0.997	
Flt Protected	0.973		0.950			
Satd. Flow (prot)	1738	0	1805	1827	1840	0
Flt Permitted	0.973		0.950			
Satd. Flow (perm)	1738	0	1805	1827	1840	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	410			1100	200	
Travel Time (s)	9.3			25.0	4.5	
Peak Hour Factor	0.75	0.75	0.97	0.97	0.88	0.88
Heavy Vehicles (%)	0%	0%	0%	4%	3%	0%
Adj. Flow (vph)	24	19	13	855	1572	32
Shared Lane Traffic (%)						
Lane Group Flow (vph)	43	0	13	855	1604	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane				Yes	Yes	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	











Intersection Summary

Area Type: Other
Control Type: Unsignalized

HCM Unsignalized Intersection Capacity Analysis












8: Lowell Road & Atwood Ave

AM 2034 NoBUILD

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	18	14	13	829	1383	28
Future Volume (Veh/h)	18	14	13	829	1383	28
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.75	0.75	0.97	0.97	0.88	0.88
Hourly flow rate (vph)	24	19	13	855	1572	32
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh				2	2	
Upstream signal (ft)				1100		
pX, platoon unblocked	0.57					
vC, conflicting volume	2469	1588	1604			
vC1, stage 1 conf vol	1588					
vC2, stage 2 conf vol	881					
vCu, unblocked vol	3204	1588	1604			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.2			
p0 queue free %	85	86	97			
cM capacity (veh/h)	157	134	413			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1		
Volume Total	43	13	855	1604		
Volume Left	24	13	0	0		
Volume Right	19	0	0	32		
cSH	146	413	1700	1700		
Volume to Capacity	0.29	0.03	0.50	0.94		
Queue Length 95th (ft)	29	2	0	0		
Control Delay (s)	39.5	14.0	0.0	0.0		
Lane LOS	E	B				
Approach Delay (s)	39.5	0.2		0.0		
Approach LOS	E					
Intersection Summary						
Average Delay			0.7			
Intersection Capacity Utilization			84.5%		ICU Level of Service	E
Analysis Period (min)			15			

Lanes, Volumes, Timings
9: Lowell Road & Pelham Road

AM 2034 NoBUILD

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	257	129	895	110	110	1257
Future Volume (vph)	257	129	895	110	110	1257
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	12	12	12	12
Storage Length (ft)	0	100		0	160	
Storage Lanes	1	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850	0.985			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1794	1835	0	1770	1863
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1794	1835	0	1770	1863
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		87	10			
Link Speed (mph)	30		30			30
Link Distance (ft)	1206		847			1100
Travel Time (s)	27.4		19.3			25.0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	286	143	994	122	122	1397
Shared Lane Traffic (%)						
Lane Group Flow (vph)	286	143	1116	0	122	1397
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						Yes
Headway Factor	1.00	0.85	1.00	1.00	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
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)	20.0		24.0		10.0	24.0
Total Split (s)	30.0		100.0		10.0	110.0
Total Split (%)	21.4%		71.4%		7.1%	78.6%
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)	-2.0		-2.0		-2.0	-2.0
Total Lost Time (s)	4.0		4.0		4.0	4.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		C-Min		None	C-Min
v/c Ratio	0.90	0.27	0.89		1.42	0.98
Control Delay	86.8	18.6	27.8		288.1	36.9

Lanes, Volumes, Timings
 9: Lowell Road & Pelham Road

AM 2034 NoBUILD

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	86.8	18.6	27.8		288.1	36.9
Queue Length 50th (ft)	256	39	744		-159	1089
Queue Length 95th (ft)	#415	98	1041		#293	#1574
Internal Link Dist (ft)	1126		767			1020
Turn Bay Length (ft)		100			160	
Base Capacity (vph)	328	525	1261		86	1421
Starvation Cap Reductn	0	0	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.87	0.27	0.89		1.42	0.98

Intersection Summary












Area Type: Other
 Cycle Length: 140
 Actuated Cycle Length: 140
 Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 ~ 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 & Pelham Road



HCM Signalized Intersection Capacity Analysis
 9: Lowell Road & Pelham Road

AM 2034 NoBUILD













						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	257	129	895	110	110	1257
Future Volume (vph)	257	129	895	110	110	1257
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	0.99		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	1794	1835		1770	1863
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1770	1794	1835		1770	1863
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	286	143	994	122	122	1397
RTOR Reduction (vph)	0	65	3	0	0	0
Lane Group Flow (vph)	286	78	1113	0	122	1397
Turn Type	Prot	pt+ov	NA		Prot	NA
Protected Phases	4	4 5	6		5	2
Permitted Phases						
Actuated Green, G (s)	23.1	34.0	94.0		4.9	104.9
Effective Green, g (s)	25.1	36.0	96.0		6.9	106.9
Actuated g/C Ratio	0.18	0.26	0.69		0.05	0.76
Clearance Time (s)	6.0		6.0		6.0	6.0
Vehicle Extension (s)	1.5		1.5		1.5	1.5
Lane Grp Cap (vph)	317	461	1258		87	1422
v/s Ratio Prot	c0.16	0.04	0.61		c0.07	c0.75
v/s Ratio Perm						
v/c Ratio	0.90	0.17	0.88		1.40	0.98
Uniform Delay, d1	56.2	40.4	17.6		66.5	15.7
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	26.7	0.1	9.3		236.3	20.0
Delay (s)	83.0	40.5	26.9		302.8	35.7
Level of Service	F	D	C		F	D
Approach Delay (s)	68.8		26.9			57.1
Approach LOS	E		C			E

Intersection Summary

HCM 2000 Control Delay	47.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	87.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			







Lanes, Volumes, Timings
3: Central Street & Lowell Road

AM 2024 BUILD

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	127	774	564	144	264	144
Future Volume (vph)	127	774	564	144	264	144
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	14	11	11
Storage Length (ft)	300			80	0	120
Storage Lanes	1			1	1	1
Taper Length (ft)	50				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1863	1863	1689	1711	1531
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1863	1863	1689	1711	1531
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				160		178
Link Speed (mph)		30	30		30	
Link Distance (ft)		688	860		450	
Travel Time (s)		15.6	19.5		10.2	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.75	0.75
Adj. Flow (vph)	149	911	664	169	352	192
Shared Lane Traffic (%)						
Lane Group Flow (vph)	149	911	664	169	352	192
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		11	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	0.92	1.04	1.04
Turning Speed (mph)	15			9	15	9
Turn Type	Prot	NA	NA	pm+ov	Prot	pm+ov
Protected Phases	1	2	2	3	3	1
Permitted Phases		1		2		3
Detector Phase	1	2	2	3	3	1
Switch Phase						
Minimum Initial (s)	8.0	10.0	10.0	8.0	8.0	8.0
Minimum Split (s)	20.0	24.0	24.0	20.0	20.0	20.0
Total Split (s)	20.0	60.0	60.0	25.0	25.0	20.0
Total Split (%)	19.0%	57.1%	57.1%	23.8%	23.8%	19.0%
Yellow Time (s)	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
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag			Lead
Lead-Lag Optimize?	Yes	Yes	Yes			Yes
Recall Mode	None	None	None	None	None	None
v/c Ratio	0.58	0.73	0.74	0.13	0.87	0.25
Control Delay	48.4	12.9	24.2	0.8	60.0	5.0

Lanes, Volumes, Timings
 3: Central Street & Lowell Road

AM 2024 BUILD

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.4	12.9	24.2	0.8	60.0	5.0
Queue Length 50th (ft)	82	285	292	1	201	5
Queue Length 95th (ft)	150	362	397	12	#321	28
Internal Link Dist (ft)		608	780		370	
Turn Bay Length (ft)	300			80		120
Base Capacity (vph)	318	1527	1172	1328	403	801
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	0.47	0.60	0.57	0.13	0.87	0.24

Intersection Summary

Area Type: Other
 Cycle Length: 105
 Actuated Cycle Length: 91
 Natural Cycle: 80
 Control Type: Actuated-Uncoordinated
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.













Splits and Phases: 3: Central Street & Lowell Road



HCM Signalized Intersection Capacity Analysis











3: Central Street & Lowell Road

AM 2024 BUILD

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	127	774	564	144	264	144
Future Volume (vph)	127	774	564	144	264	144
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	14	11	11
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1863	1863	1689	1711	1531
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	1863	1863	1689	1711	1531
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.75	0.75
Adj. Flow (vph)	149	911	664	169	352	192
RTOR Reduction (vph)	0	0	0	45	0	110
Lane Group Flow (vph)	149	911	664	124	352	82
Turn Type	Prot	NA	NA	pm+ov	Prot	pm+ov
Protected Phases	1	2	2	3	3	1
Permitted Phases		1		2		3
Actuated Green, G (s)	11.2	53.2	42.0	61.4	19.4	30.6
Effective Green, g (s)	13.2	57.2	44.0	65.4	21.4	34.6
Actuated g/C Ratio	0.15	0.63	0.49	0.72	0.24	0.38
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	1.5	2.5	2.5	1.5	1.5	1.5
Lane Grp Cap (vph)	257	1258	904	1293	404	652
v/s Ratio Prot	0.08	c0.35	0.36	0.02	c0.21	0.02
v/s Ratio Perm		0.14		0.05		0.04
v/c Ratio	0.58	0.72	0.73	0.10	0.87	0.13
Uniform Delay, d1	36.1	11.3	18.6	3.8	33.3	18.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.0	2.0	2.9	0.0	17.7	0.0
Delay (s)	38.1	13.3	21.6	3.8	51.0	18.2
Level of Service	D	B	C	A	D	B
Approach Delay (s)		16.8	18.0		39.4	
Approach LOS		B	B		D	
Intersection Summary						
HCM 2000 Control Delay			22.2		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.80			
Actuated Cycle Length (s)			90.6		Sum of lost time (s)	12.0
Intersection Capacity Utilization			62.0%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						

Lanes, Volumes, Timings
 4: Lowell Road & County Road (N)

AM 2024 BUILD

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	4	33	646	6	29	1035
Future Volume (vph)	4	33	646	6	29	1035
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	50	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.880		0.999			
Flt Protected	0.994				0.950	
Satd. Flow (prot)	1617	0	1792	0	1626	1827
Flt Permitted	0.994				0.950	
Satd. Flow (perm)	1617	0	1792	0	1626	1827
Link Speed (mph)	30		30			30
Link Distance (ft)	1120		950			1800
Travel Time (s)	25.5		21.6			40.9
Peak Hour Factor	0.83	0.83	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	25%	0%	6%	0%	11%	4%
Adj. Flow (vph)	5	40	726	7	33	1163
Shared Lane Traffic (%)						
Lane Group Flow (vph)	45	0	733	0	33	1163
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free











Intersection Summary

Area Type: Other
 Control Type: Unsignalized

HCM Unsignalized Intersection Capacity Analysis












4: Lowell Road & County Road (N)

AM 2024 BUILD

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	4	33	646	6	29	1035
Future Volume (Veh/h)	4	33	646	6	29	1035
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.83	0.83	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	5	40	726	7	33	1163
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage (veh)			2			2
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1958	730			733	
vC1, stage 1 conf vol	730					
vC2, stage 2 conf vol	1229					
vCu, unblocked vol	1958	730			733	
tC, single (s)	6.6	6.2			4.2	
tC, 2 stage (s)	5.6					
tF (s)	3.7	3.3			2.3	
p0 queue free %	98	91			96	
cM capacity (veh/h)	209	426			832	
Direction, Lane #	WB 1	NB 1	SB 1	SB 2		
Volume Total	45	733	33	1163		
Volume Left	5	0	33	0		
Volume Right	40	7	0	0		
cSH	382	1700	832	1700		
Volume to Capacity	0.12	0.43	0.04	0.68		
Queue Length 95th (ft)	10	0	3	0		
Control Delay (s)	15.7	0.0	9.5	0.0		
Lane LOS	C		A			
Approach Delay (s)	15.7	0.0	0.3			
Approach LOS	C					
Intersection Summary						
Average Delay			0.5			
Intersection Capacity Utilization			64.5%		ICU Level of Service	C
Analysis Period (min)			15			

Lanes, Volumes, Timings
5: Lowell Road & Prop. Site Drive

AM 2024 BUILD












						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	64	86	54	575	997	98
Future Volume (vph)	64	86	54	575	997	98
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	50	50			0
Storage Lanes	1	1	1			0
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.988	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1805	1615	1805	1810	1827	0
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1805	1615	1805	1810	1827	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	260			200	950	
Travel Time (s)	5.9			4.5	21.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	0%	5%	3%	0%
Adj. Flow (vph)	71	96	60	639	1108	109
Shared Lane Traffic (%)						
Lane Group Flow (vph)	71	96	60	639	1217	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane				Yes	Yes	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized











HCM Unsignalized Intersection Capacity Analysis
 5: Lowell Road & Prop. Site Drive

AM 2024 BUILD

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	64	86	54	575	997	98
Future Volume (Veh/h)	64	86	54	575	997	98
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	71	96	60	639	1108	109
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)		2				
Median type				TWLTL	TWLTL	
Median storage veh				2	2	
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1922	1162	1217			
vC1, stage 1 conf vol	1162					
vC2, stage 2 conf vol	759					
vCu, unblocked vol	1922	1162	1217			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.2			
p0 queue free %	71	60	90			
cM capacity (veh/h)	245	240	580			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1		
Volume Total	167	60	639	1217		
Volume Left	71	60	0	0		
Volume Right	96	0	0	109		
cSH	417	580	1700	1700		
Volume to Capacity	0.40	0.10	0.38	0.72		
Queue Length 95th (ft)	47	9	0	0		
Control Delay (s)	28.0	11.9	0.0	0.0		
Lane LOS	D	B				
Approach Delay (s)	28.0	1.0		0.0		
Approach LOS	D					
Intersection Summary						
Average Delay			2.6			
Intersection Capacity Utilization			70.4%	ICU Level of Service		C
Analysis Period (min)			15			

Lanes, Volumes, Timings
6: Lowell Road & County Road (S)

AM 2024 BUILD











						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	106	9	620	108	14	1069
Future Volume (vph)	106	9	620	108	14	1069
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	50	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.990		0.980			
Flt Protected	0.956				0.950	
Satd. Flow (prot)	1782	0	1781	0	1583	1827
Flt Permitted	0.956				0.950	
Satd. Flow (perm)	1782	0	1781	0	1583	1827
Link Speed (mph)	30		30			30
Link Distance (ft)	940		200			200
Travel Time (s)	21.4		4.5			4.5
Peak Hour Factor	0.88	0.88	0.92	0.92	0.88	0.88
Heavy Vehicles (%)	1%	0%	5%	2%	14%	4%
Adj. Flow (vph)	120	10	674	117	16	1215
Shared Lane Traffic (%)						
Lane Group Flow (vph)	130	0	791	0	16	1215
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other
Control Type: Unsignalized










HCM Unsignalized Intersection Capacity Analysis
 6: Lowell Road & County Road (S)

AM 2024 BUILD

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	106	9	620	108	14	1069
Future Volume (Veh/h)	106	9	620	108	14	1069
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.88	0.88	0.92	0.92	0.88	0.88
Hourly flow rate (vph)	120	10	674	117	16	1215
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh			2			2
Upstream signal (ft)			1300			
pX, platoon unblocked	0.72	0.72			0.72	
vC, conflicting volume	1980	732			791	
vC1, stage 1 conf vol	732					
vC2, stage 2 conf vol	1247					
vCu, unblocked vol	2167	432			513	
tC, single (s)	6.4	6.2			4.2	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.3	
p0 queue free %	47	98			98	
cM capacity (veh/h)	225	451			714	
Direction, Lane #	WB 1	NB 1	SB 1	SB 2		
Volume Total	130	791	16	1215		
Volume Left	120	0	16	0		
Volume Right	10	117	0	0		
cSH	234	1700	714	1700		
Volume to Capacity	0.55	0.47	0.02	0.71		
Queue Length 95th (ft)	76	0	2	0		
Control Delay (s)	38.0	0.0	10.2	0.0		
Lane LOS	E		B			
Approach Delay (s)	38.0	0.0	0.1			
Approach LOS	E					
Intersection Summary						
Average Delay			2.4			
Intersection Capacity Utilization			69.4%		ICU Level of Service	C
Analysis Period (min)			15			

Lanes, Volumes, Timings
7: Atwood Ave & Prop. Site Drive

AM 2024 BUILD










						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	1	32	41	0	2	0
Future Volume (vph)	1	32	41	0	2	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected		0.999			0.950	
Satd. Flow (prot)	0	1898	1900	0	1805	0
Flt Permitted		0.999			0.950	
Satd. Flow (perm)	0	1898	1900	0	1805	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		364	410		243	
Travel Time (s)		8.3	9.3		5.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	1	36	46	0	2	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	37	46	0	2	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized











HCM Unsignalized Intersection Capacity Analysis
 7: Atwood Ave & Prop. Site Drive

AM 2024 BUILD

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	1	32	41	0	2	0
Future Volume (Veh/h)	1	32	41	0	2	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	1	36	46	0	2	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	46				84	46
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	46				84	46
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1575				922	1029
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	37	46	2			
Volume Left	1	0	2			
Volume Right	0	0	0			
cSH	1575	1700	922			
Volume to Capacity	0.00	0.03	0.00			
Queue Length 95th (ft)	0	0	0			
Control Delay (s)	0.2	0.0	8.9			
Lane LOS	A		A			
Approach Delay (s)	0.2	0.0	8.9			
Approach LOS			A			
Intersection Summary						
Average Delay			0.3			
Intersection Capacity Utilization			13.3%	ICU Level of Service		A
Analysis Period (min)			15			

Lanes, Volumes, Timings
8: Lowell Road & Atwood Ave

AM 2024 BUILD











						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	19	15	13	694	1146	28
Future Volume (vph)	19	15	13	694	1146	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	50			0
Storage Lanes	1	0	1			0
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.940				0.997	
Flt Protected	0.973		0.950			
Satd. Flow (prot)	1738	0	1805	1827	1840	0
Flt Permitted	0.973		0.950			
Satd. Flow (perm)	1738	0	1805	1827	1840	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	410			1100	200	
Travel Time (s)	9.3			25.0	4.5	
Peak Hour Factor	0.75	0.75	0.97	0.97	0.88	0.88
Heavy Vehicles (%)	0%	0%	0%	4%	3%	0%
Adj. Flow (vph)	25	20	13	715	1302	32
Shared Lane Traffic (%)						
Lane Group Flow (vph)	45	0	13	715	1334	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane				Yes	Yes	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized












HCM Unsignalized Intersection Capacity Analysis
 8: Lowell Road & Atwood Ave

AM 2024 BUILD

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	19	15	13	694	1146	28
Future Volume (Veh/h)	19	15	13	694	1146	28
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.75	0.75	0.97	0.97	0.88	0.88
Hourly flow rate (vph)	25	20	13	715	1302	32
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh				2	2	
Upstream signal (ft)				1100		
pX, platoon unblocked	0.71					
vC, conflicting volume	2059	1318	1334			
vC1, stage 1 conf vol	1318					
vC2, stage 2 conf vol	741					
vCu, unblocked vol	2290	1318	1334			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.2			
p0 queue free %	88	90	98			
cM capacity (veh/h)	214	194	524			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1		
Volume Total	45	13	715	1334		
Volume Left	25	13	0	0		
Volume Right	20	0	0	32		
cSH	205	524	1700	1700		
Volume to Capacity	0.22	0.02	0.42	0.78		
Queue Length 95th (ft)	20	2	0	0		
Control Delay (s)	27.5	12.0	0.0	0.0		
Lane LOS	D	B				
Approach Delay (s)	27.5	0.2		0.0		
Approach LOS	D					
Intersection Summary						
Average Delay			0.7			
Intersection Capacity Utilization			72.0%		ICU Level of Service	C
Analysis Period (min)			15			

Lanes, Volumes, Timings
9: Lowell Road & Pelham Road

AM 2024 BUILD

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	209	107	746	90	91	1043
Future Volume (vph)	209	107	746	90	91	1043
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	12	12	12	12
Storage Length (ft)	0	100		0	160	
Storage Lanes	1	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850	0.985			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1794	1835	0	1770	1863
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1794	1835	0	1770	1863
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		89	10			
Link Speed (mph)	30		30			30
Link Distance (ft)	1206		847			1100
Travel Time (s)	27.4		19.3			25.0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	232	119	829	100	101	1159
Shared Lane Traffic (%)						
Lane Group Flow (vph)	232	119	929	0	101	1159
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						Yes
Headway Factor	1.00	0.85	1.00	1.00	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
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)	20.0		24.0		10.0	24.0
Total Split (s)	30.0		100.0		10.0	110.0
Total Split (%)	21.4%		71.4%		7.1%	78.6%
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)	-2.0		-2.0		-2.0	-2.0
Total Lost Time (s)	4.0		4.0		4.0	4.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		C-Min		None	C-Min
v/c Ratio	0.81	0.20	0.77		0.57	0.80
Control Delay	77.6	13.4	22.1		72.8	15.1

Lanes, Volumes, Timings
 9: Lowell Road & Pelham Road

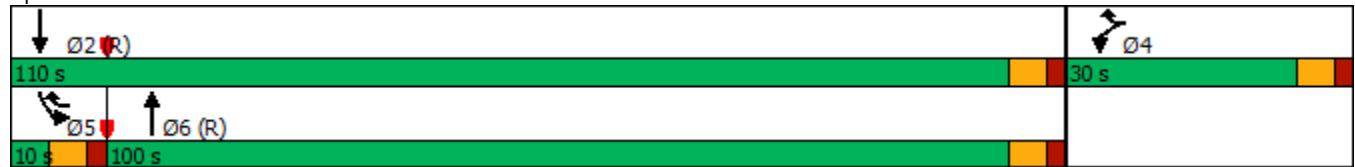
AM 2024 BUILD

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	77.6	13.4	22.1		72.8	15.1
Queue Length 50th (ft)	204	19	617		87	559
Queue Length 95th (ft)	296	72	663		#244	837
Internal Link Dist (ft)	1126		767			1020
Turn Bay Length (ft)		100			160	
Base Capacity (vph)	328	579	1261		177	1453
Starvation Cap Reductn	0	0	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.71	0.21	0.74		0.57	0.80

Intersection Summary












Area Type: Other
 Cycle Length: 140
 Actuated Cycle Length: 140
 Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Green
 Natural Cycle: 75
 Control Type: Actuated-Coordinated
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 9: Lowell Road & Pelham Road















HCM Signalized Intersection Capacity Analysis
 9: Lowell Road & Pelham Road

AM 2024 BUILD

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	209	107	746	90	91	1043
Future Volume (vph)	209	107	746	90	91	1043
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	0.99		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	1794	1836		1770	1863
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1770	1794	1836		1770	1863
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	232	119	829	100	101	1159
RTOR Reduction (vph)	0	63	3	0	0	0
Lane Group Flow (vph)	232	56	926	0	101	1159
Turn Type	Prot	pt+ov	NA		Prot	NA
Protected Phases	4	4 5	6		5	2
Permitted Phases						
Actuated Green, G (s)	20.7	38.7	89.3		12.0	107.3
Effective Green, g (s)	22.7	40.7	91.3		14.0	109.3
Actuated g/C Ratio	0.16	0.29	0.65		0.10	0.78
Clearance Time (s)	6.0		6.0		6.0	6.0
Vehicle Extension (s)	1.5		1.5		1.5	1.5
Lane Grp Cap (vph)	286	521	1197		177	1454
v/s Ratio Prot	c0.13	0.03	0.50		0.06	c0.62
v/s Ratio Perm						
v/c Ratio	0.81	0.11	0.77		0.57	0.80
Uniform Delay, d1	56.6	36.3	17.1		60.1	8.9
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	15.1	0.0	4.9		2.7	4.6
Delay (s)	71.7	36.4	22.0		62.9	13.5
Level of Service	E	D	C		E	B
Approach Delay (s)	59.7		22.0			17.5
Approach LOS	E		C			B
Intersection Summary						
HCM 2000 Control Delay			25.0		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.82			
Actuated Cycle Length (s)			140.0		Sum of lost time (s)	12.0
Intersection Capacity Utilization			73.1%		ICU Level of Service	D
Analysis Period (min)			15			
c Critical Lane Group						







Lanes, Volumes, Timings
3: Central Street & Lowell Road

AM 2034 BUILD

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	155	937	680	175	323	177
Future Volume (vph)	155	937	680	175	323	177
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	14	11	11
Storage Length (ft)	300			80	0	120
Storage Lanes	1			1	1	1
Taper Length (ft)	50				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1863	1863	1689	1711	1531
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1863	1863	1689	1711	1531
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				162		151
Link Speed (mph)		30	30		30	
Link Distance (ft)		688	860		450	
Travel Time (s)		15.6	19.5		10.2	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.75	0.75
Adj. Flow (vph)	182	1102	800	206	431	236
Shared Lane Traffic (%)						
Lane Group Flow (vph)	182	1102	800	206	431	236
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		11	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	0.92	1.04	1.04
Turning Speed (mph)	15			9	15	9
Turn Type	Prot	NA	NA	pm+ov	Prot	pm+ov
Protected Phases	1	2	2	3	3	1
Permitted Phases		1		2		3
Detector Phase	1	2	2	3	3	1
Switch Phase						
Minimum Initial (s)	8.0	10.0	10.0	8.0	8.0	8.0
Minimum Split (s)	20.0	24.0	24.0	20.0	20.0	20.0
Total Split (s)	20.0	60.0	60.0	25.0	25.0	20.0
Total Split (%)	19.0%	57.1%	57.1%	23.8%	23.8%	19.0%
Yellow Time (s)	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
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag			Lead
Lead-Lag Optimize?	Yes	Yes	Yes			Yes
Recall Mode	None	None	None	None	None	None
v/c Ratio	0.71	0.84	0.83	0.15	1.18	0.34
Control Delay	57.9	17.7	29.0	1.1	141.7	9.8

Lanes, Volumes, Timings
 3: Central Street & Lowell Road

AM 2034 BUILD

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.9	17.7	29.0	1.1	141.7	9.8
Queue Length 50th (ft)	117	431	419	6	-365	36
Queue Length 95th (ft)	180	552	532	18	#424	61
Internal Link Dist (ft)		608	780		370	
Turn Bay Length (ft)	300			80		120
Base Capacity (vph)	288	1409	1064	1343	366	728
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	0.63	0.78	0.75	0.15	1.18	0.32

Intersection Summary













Area Type: Other
 Cycle Length: 105
 Actuated Cycle Length: 99
 Natural Cycle: 90
 Control Type: Actuated-Uncoordinated
 ~ 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: 3: Central Street & Lowell Road



HCM Signalized Intersection Capacity Analysis
 3: Central Street & Lowell Road

AM 2034 BUILD











						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	155	937	680	175	323	177
Future Volume (vph)	155	937	680	175	323	177
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	14	11	11
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1863	1863	1689	1711	1531
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	1863	1863	1689	1711	1531
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.75	0.75
Adj. Flow (vph)	182	1102	800	206	431	236
RTOR Reduction (vph)	0	0	0	43	0	97
Lane Group Flow (vph)	182	1102	800	163	431	139
Turn Type	Prot	NA	NA	pm+ov	Prot	pm+ov
Protected Phases	1	2	2	3	3	1
Permitted Phases		1		2		3
Actuated Green, G (s)	12.3	61.7	49.4	68.6	19.2	31.5
Effective Green, g (s)	14.3	65.7	51.4	72.6	21.2	35.5
Actuated g/C Ratio	0.14	0.66	0.52	0.73	0.21	0.36
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	1.5	2.5	2.5	1.5	1.5	1.5
Lane Grp Cap (vph)	255	1312	968	1308	366	611
v/s Ratio Prot	0.10	c0.44	0.43	0.03	c0.25	0.03
v/s Ratio Perm		0.16		0.07		0.06
v/c Ratio	0.71	0.84	0.83	0.12	1.18	0.23
Uniform Delay, d1	40.3	12.6	20.0	3.8	38.9	22.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	7.6	4.8	5.7	0.0	104.8	0.1
Delay (s)	48.0	17.4	25.7	3.9	143.6	22.2
Level of Service	D	B	C	A	F	C
Approach Delay (s)		21.8	21.3		100.7	
Approach LOS		C	C		F	

Intersection Summary

HCM 2000 Control Delay	39.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	98.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	73.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings
 4: Lowell Road & County Road (N)

AM 2034 BUILD

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	5	40	779	8	35	1256
Future Volume (vph)	5	40	779	8	35	1256
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	50	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.880		0.999			
Flt Protected	0.994				0.950	
Satd. Flow (prot)	1617	0	1792	0	1626	1827
Flt Permitted	0.994				0.950	
Satd. Flow (perm)	1617	0	1792	0	1626	1827
Link Speed (mph)	30		30			30
Link Distance (ft)	1120		950			1800
Travel Time (s)	25.5		21.6			40.9
Peak Hour Factor	0.83	0.83	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	25%	0%	6%	0%	11%	4%
Adj. Flow (vph)	6	48	875	9	39	1411
Shared Lane Traffic (%)						
Lane Group Flow (vph)	54	0	884	0	39	1411
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free











Intersection Summary

Area Type: Other
 Control Type: Unsignalized

HCM Unsignalized Intersection Capacity Analysis












4: Lowell Road & County Road (N)

AM 2034 BUILD

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	5	40	779	8	35	1256
Future Volume (Veh/h)	5	40	779	8	35	1256
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.83	0.83	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	6	48	875	9	39	1411
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage (veh)			2			2
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2368	880			884	
vC1, stage 1 conf vol	880					
vC2, stage 2 conf vol	1489					
vCu, unblocked vol	2368	880			884	
tC, single (s)	6.6	6.2			4.2	
tC, 2 stage (s)	5.6					
tF (s)	3.7	3.3			2.3	
p0 queue free %	96	86			95	
cM capacity (veh/h)	154	349			729	
Direction, Lane #	WB 1	NB 1	SB 1	SB 2		
Volume Total	54	884	39	1411		
Volume Left	6	0	39	0		
Volume Right	48	9	0	0		
cSH	306	1700	729	1700		
Volume to Capacity	0.18	0.52	0.05	0.83		
Queue Length 95th (ft)	16	0	4	0		
Control Delay (s)	19.3	0.0	10.2	0.0		
Lane LOS	C		B			
Approach Delay (s)	19.3	0.0	0.3			
Approach LOS	C					
Intersection Summary						
Average Delay			0.6			
Intersection Capacity Utilization			76.1%		ICU Level of Service	D
Analysis Period (min)			15			

Lanes, Volumes, Timings
5: Lowell Road & Prop. Site Drive

AM 2034 BUILD












						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	64	86	54	706	1232	98
Future Volume (vph)	64	86	54	706	1232	98
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	50	50			0
Storage Lanes	1	1	1			0
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.990	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1805	1615	1805	1810	1830	0
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1805	1615	1805	1810	1830	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	260			200	950	
Travel Time (s)	5.9			4.5	21.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	0%	5%	3%	0%
Adj. Flow (vph)	71	96	60	784	1369	109
Shared Lane Traffic (%)						
Lane Group Flow (vph)	71	96	60	784	1478	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane				Yes	Yes	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized











HCM Unsignalized Intersection Capacity Analysis
 5: Lowell Road & Prop. Site Drive

AM 2034 BUILD

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	64	86	54	706	1232	98
Future Volume (Veh/h)	64	86	54	706	1232	98
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	71	96	60	784	1369	109
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)		2				
Median type				TWLTL	TWLTL	
Median storage veh				2	2	
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2328	1424	1478			
vC1, stage 1 conf vol	1424					
vC2, stage 2 conf vol	904					
vCu, unblocked vol	2328	1424	1478			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.2			
p0 queue free %	62	43	87			
cM capacity (veh/h)	185	168	462			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1		
Volume Total	167	60	784	1478		
Volume Left	71	60	0	0		
Volume Right	96	0	0	109		
cSH	293	462	1700	1700		
Volume to Capacity	0.57	0.13	0.46	0.87		
Queue Length 95th (ft)	82	11	0	0		
Control Delay (s)	45.0	14.0	0.0	0.0		
Lane LOS	E	B				
Approach Delay (s)	45.0	1.0		0.0		
Approach LOS	E					
Intersection Summary						
Average Delay			3.4			
Intersection Capacity Utilization			82.8%		ICU Level of Service	E
Analysis Period (min)			15			

Lanes, Volumes, Timings
6: Lowell Road & County Road (S)

AM 2034 BUILD

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	130	11	749	133	18	1300
Future Volume (vph)	130	11	749	133	18	1300
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	50	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.989		0.980			
Flt Protected	0.956				0.950	
Satd. Flow (prot)	1780	0	1781	0	1583	1827
Flt Permitted	0.956				0.950	
Satd. Flow (perm)	1780	0	1781	0	1583	1827
Link Speed (mph)	30		30			30
Link Distance (ft)	940		200			200
Travel Time (s)	21.4		4.5			4.5
Peak Hour Factor	0.88	0.88	0.92	0.92	0.88	0.88
Heavy Vehicles (%)	1%	0%	5%	2%	14%	4%
Adj. Flow (vph)	148	13	814	145	20	1477
Shared Lane Traffic (%)						
Lane Group Flow (vph)	161	0	959	0	20	1477
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free











Intersection Summary

Area Type: Other
Control Type: Unsignalized

HCM Unsignalized Intersection Capacity Analysis










6: Lowell Road & County Road (S)

AM 2034 BUILD

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	130	11	749	133	18	1300
Future Volume (Veh/h)	130	11	749	133	18	1300
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.88	0.88	0.92	0.92	0.88	0.88
Hourly flow rate (vph)	148	12	814	145	20	1477
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh			2			2
Upstream signal (ft)			1300			
pX, platoon unblocked	0.56	0.56			0.56	
vC, conflicting volume	2404	886			959	
vC1, stage 1 conf vol	886					
vC2, stage 2 conf vol	1517					
vCu, unblocked vol	3106	409			538	
tC, single (s)	6.4	6.2			4.2	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.3	
p0 queue free %	9	97			96	
cM capacity (veh/h)	163	364			547	
Direction, Lane #	WB 1	NB 1	SB 1	SB 2		
Volume Total	160	959	20	1477		
Volume Left	148	0	20	0		
Volume Right	12	145	0	0		
cSH	170	1700	547	1700		
Volume to Capacity	0.94	0.56	0.04	0.87		
Queue Length 95th (ft)	179	0	3	0		
Control Delay (s)	108.8	0.0	11.8	0.0		
Lane LOS	F		B			
Approach Delay (s)	108.8	0.0	0.2			
Approach LOS	F					
Intersection Summary						
Average Delay			6.7			
Intersection Capacity Utilization			83.0%		ICU Level of Service	E
Analysis Period (min)			15			

Lanes, Volumes, Timings
7: Atwood Ave & Prop. Site Drive

AM 2034 BUILD










						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	1	32	41	0	2	0
Future Volume (vph)	1	32	41	0	2	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frts						
Flt Protected		0.999			0.950	
Satd. Flow (prot)	0	1898	1900	0	1805	0
Flt Permitted		0.999			0.950	
Satd. Flow (perm)	0	1898	1900	0	1805	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		364	410		243	
Travel Time (s)		8.3	9.3		5.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	1	36	46	0	2	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	37	46	0	2	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized











HCM Unsignalized Intersection Capacity Analysis
 7: Atwood Ave & Prop. Site Drive

AM 2034 BUILD

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	1	32	41	0	2	0
Future Volume (Veh/h)	1	32	41	0	2	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	1	36	46	0	2	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	46				84	46
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	46				84	46
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1575				922	1029
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	37	46	2			
Volume Left	1	0	2			
Volume Right	0	0	0			
cSH	1575	1700	922			
Volume to Capacity	0.00	0.03	0.00			
Queue Length 95th (ft)	0	0	0			
Control Delay (s)	0.2	0.0	8.9			
Lane LOS	A		A			
Approach Delay (s)	0.2	0.0	8.9			
Approach LOS			A			
Intersection Summary						
Average Delay			0.3			
Intersection Capacity Utilization			13.3%	ICU Level of Service		A
Analysis Period (min)			15			

Lanes, Volumes, Timings
8: Lowell Road & Atwood Ave

AM 2034 BUILD











						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	19	15	13	841	1395	28
Future Volume (vph)	19	15	13	841	1395	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	50			0
Storage Lanes	1	0	1			0
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.940				0.997	
Flt Protected	0.973		0.950			
Satd. Flow (prot)	1738	0	1805	1827	1840	0
Flt Permitted	0.973		0.950			
Satd. Flow (perm)	1738	0	1805	1827	1840	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	410			1100	200	
Travel Time (s)	9.3			25.0	4.5	
Peak Hour Factor	0.75	0.75	0.97	0.97	0.88	0.88
Heavy Vehicles (%)	0%	0%	0%	4%	3%	0%
Adj. Flow (vph)	25	20	13	867	1585	32
Shared Lane Traffic (%)						
Lane Group Flow (vph)	45	0	13	867	1617	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane				Yes	Yes	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized












HCM Unsignalized Intersection Capacity Analysis
 8: Lowell Road & Atwood Ave

AM 2034 BUILD

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	19	15	13	841	1395	28
Future Volume (Veh/h)	19	15	13	841	1395	28
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.75	0.75	0.97	0.97	0.88	0.88
Hourly flow rate (vph)	25	20	13	867	1585	32
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh				2	2	
Upstream signal (ft)				1100		
pX, platoon unblocked	0.55					
vC, conflicting volume	2494	1601	1617			
vC1, stage 1 conf vol	1601					
vC2, stage 2 conf vol	893					
vCu, unblocked vol	3297	1601	1617			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.2			
p0 queue free %	84	85	97			
cM capacity (veh/h)	155	132	408			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1		
Volume Total	45	13	867	1617		
Volume Left	25	13	0	0		
Volume Right	20	0	0	32		
cSH	144	408	1700	1700		
Volume to Capacity	0.31	0.03	0.51	0.95		
Queue Length 95th (ft)	31	2	0	0		
Control Delay (s)	41.1	14.1	0.0	0.0		
Lane LOS	E	B				
Approach Delay (s)	41.1	0.2		0.0		
Approach LOS	E					
Intersection Summary						
Average Delay			0.8			
Intersection Capacity Utilization			85.1%		ICU Level of Service	E
Analysis Period (min)			15			

Lanes, Volumes, Timings
9: Lowell Road & Pelham Road

AM 2034 BUILD

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	257	131	905	110	111	1269
Future Volume (vph)	257	131	905	110	111	1269
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	12	12	12	12
Storage Length (ft)	0	100		0	160	
Storage Lanes	1	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850	0.985			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1794	1835	0	1770	1863
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1794	1835	0	1770	1863
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		88	10			
Link Speed (mph)	30		30			30
Link Distance (ft)	1206		847			1100
Travel Time (s)	27.4		19.3			25.0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	286	146	1006	122	123	1410
Shared Lane Traffic (%)						
Lane Group Flow (vph)	286	146	1128	0	123	1410
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						Yes
Headway Factor	1.00	0.85	1.00	1.00	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
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)	20.0		24.0		10.0	24.0
Total Split (s)	30.0		100.0		10.0	110.0
Total Split (%)	21.4%		71.4%		7.1%	78.6%
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)	-2.0		-2.0		-2.0	-2.0
Total Lost Time (s)	4.0		4.0		4.0	4.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		C-Min		None	C-Min
v/c Ratio	0.90	0.28	0.89		1.43	0.99
Control Delay	86.8	18.8	28.7		292.4	39.1

Lanes, Volumes, Timings
 9: Lowell Road & Pelham Road

AM 2034 BUILD

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	86.8	18.8	28.7		292.4	39.1
Queue Length 50th (ft)	256	41	765		-161	1129
Queue Length 95th (ft)	#415	100	#1089		#295	#1598
Internal Link Dist (ft)	1126		767			1020
Turn Bay Length (ft)		100			160	
Base Capacity (vph)	328	526	1261		86	1421
Starvation Cap Reductn	0	0	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.87	0.28	0.89		1.43	0.99

Intersection Summary

Area Type: Other
 Cycle Length: 140
 Actuated Cycle Length: 140
 Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 ~ 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 & Pelham Road



HCM Signalized Intersection Capacity Analysis

9: Lowell Road & Pelham Road

AM 2034 BUILD

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	257	131	905	110	111	1269
Future Volume (vph)	257	131	905	110	111	1269
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	0.99		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	1794	1836		1770	1863
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1770	1794	1836		1770	1863
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	286	146	1006	122	123	1410
RTOR Reduction (vph)	0	65	3	0	0	0
Lane Group Flow (vph)	286	81	1125	0	123	1410
Turn Type	Prot	pt+ov	NA		Prot	NA
Protected Phases	4	4 5	6		5	2
Permitted Phases						
Actuated Green, G (s)	23.1	34.0	94.0		4.9	104.9
Effective Green, g (s)	25.1	36.0	96.0		6.9	106.9
Actuated g/C Ratio	0.18	0.26	0.69		0.05	0.76
Clearance Time (s)	6.0		6.0		6.0	6.0
Vehicle Extension (s)	1.5		1.5		1.5	1.5
Lane Grp Cap (vph)	317	461	1258		87	1422
v/s Ratio Prot	c0.16	0.04	0.61		c0.07	c0.76
v/s Ratio Perm						
v/c Ratio	0.90	0.17	0.89		1.41	0.99
Uniform Delay, d1	56.2	40.4	17.9		66.5	16.1
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	26.7	0.1	10.0		240.9	21.9
Delay (s)	83.0	40.5	27.9		307.4	38.1
Level of Service	F	D	C		F	D
Approach Delay (s)	68.6		27.9			59.7
Approach LOS	E		C			E













Intersection Summary

HCM 2000 Control Delay	49.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	87.7%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

APPENDIX G







Lanes, Volumes, Timings
3: Central Street & Lowell Road

PM 2023 BASE

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	222	725	825	151	221	115
Future Volume (vph)	222	725	825	151	221	115
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	14	12	12
Storage Length (ft)	300			80	0	120
Storage Lanes	1			1	1	0
Taper Length (ft)	50				50	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1863	1863	1689	1770	1583
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1863	1863	1689	1770	1583
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				116		103
Link Speed (mph)		30	30		30	
Link Distance (ft)		688	860		450	
Travel Time (s)		15.6	19.5		10.2	
Peak Hour Factor	0.92	0.92	0.87	0.87	0.88	0.88
Adj. Flow (vph)	241	788	948	174	251	131
Shared Lane Traffic (%)						
Lane Group Flow (vph)	241	788	948	174	251	131
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	0.92	1.00	1.00
Turning Speed (mph)	15			9	15	9
Turn Type	Prot	NA	NA	pm+ov	Prot	pm+ov
Protected Phases	1	2	2	3	3	1
Permitted Phases		1		2		3
Detector Phase	1	2	2	3	3	1
Switch Phase						
Minimum Initial (s)	8.0	10.0	10.0	10.0	10.0	8.0
Minimum Split (s)	20.0	24.0	24.0	24.0	24.0	20.0
Total Split (s)	20.0	60.0	60.0	25.0	25.0	20.0
Total Split (%)	19.0%	57.1%	57.1%	23.8%	23.8%	19.0%
Yellow Time (s)	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
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag			Lead
Lead-Lag Optimize?	Yes	Yes	Yes			Yes
Recall Mode	None	None	None	None	None	None
v/c Ratio	0.88	0.58	0.94	0.13	0.76	0.20
Control Delay	74.7	8.6	41.4	1.3	55.1	7.2

Lanes, Volumes, Timings
 3: Central Street & Lowell Road

PM 2023 BASE

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	74.7	8.6	41.4	1.3	55.1	7.2
Queue Length 50th (ft)	161	219	577	8	158	12
Queue Length 95th (ft)	#305	312	#823	20	#243	47
Internal Link Dist (ft)		608	780		370	
Turn Bay Length (ft)	300			80		120
Base Capacity (vph)	278	1389	1026	1351	366	670
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	0.57	0.92	0.13	0.69	0.20

Intersection Summary













Area Type: Other
 Cycle Length: 105
 Actuated Cycle Length: 101.9
 Natural Cycle: 90
 Control Type: Actuated-Uncoordinated
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 3: Central Street & Lowell Road













HCM Signalized Intersection Capacity Analysis
 3: Central Street & Lowell Road

PM 2023 BASE

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	222	725	825	151	221	115
Future Volume (vph)	222	725	825	151	221	115
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	14	12	12
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1863	1863	1689	1770	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	1863	1863	1689	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.87	0.87	0.88	0.88
Adj. Flow (vph)	241	788	948	174	251	131
RTOR Reduction (vph)	0	0	0	32	0	68
Lane Group Flow (vph)	241	788	948	142	251	63
Turn Type	Prot	NA	NA	pm+ov	Prot	pm+ov
Protected Phases	1	2	2	3	3	1
Permitted Phases		1		2		3
Actuated Green, G (s)	13.8	66.8	53.0	70.1	17.1	30.9
Effective Green, g (s)	15.8	70.8	55.0	74.1	19.1	34.9
Actuated g/C Ratio	0.16	0.69	0.54	0.73	0.19	0.34
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	1.5	2.5	2.5	2.5	2.5	1.5
Lane Grp Cap (vph)	274	1367	1005	1294	331	604
v/s Ratio Prot	c0.14	0.31	c0.51	0.02	c0.14	0.02
v/s Ratio Perm		0.11		0.06		0.02
v/c Ratio	0.88	0.58	0.94	0.11	0.76	0.10
Uniform Delay, d1	42.1	7.9	22.0	4.1	39.2	22.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	25.1	0.5	16.4	0.0	9.1	0.0
Delay (s)	67.2	8.4	38.4	4.1	48.3	22.9
Level of Service	E	A	D	A	D	C
Approach Delay (s)		22.2	33.1		39.6	
Approach LOS		C	C		D	
Intersection Summary						
HCM 2000 Control Delay			29.6		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.89			
Actuated Cycle Length (s)			101.9		Sum of lost time (s)	12.0
Intersection Capacity Utilization			78.0%		ICU Level of Service	D
Analysis Period (min)			15			
c Critical Lane Group						

Lanes, Volumes, Timings
4: Lowell Road & County Road (N)

PM 2023 BASE











						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	2	34	974	6	49	793
Future Volume (vph)	2	34	974	6	49	793
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	50	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.873		0.999			
Flt Protected	0.997				0.950	
Satd. Flow (prot)	1654	0	1879	0	1805	1881
Flt Permitted	0.997				0.950	
Satd. Flow (perm)	1654	0	1879	0	1805	1881
Link Speed (mph)	30		30			30
Link Distance (ft)	1120		950			1800
Travel Time (s)	25.5		21.6			40.9
Peak Hour Factor	0.69	0.69	0.96	0.96	0.94	0.94
Heavy Vehicles (%)	0%	0%	1%	0%	0%	1%
Adj. Flow (vph)	3	49	1015	6	52	844
Shared Lane Traffic (%)						
Lane Group Flow (vph)	52	0	1021	0	52	844
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other
Control Type: Unsignalized











HCM Unsignalized Intersection Capacity Analysis
 4: Lowell Road & County Road (N)

PM 2023 BASE

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	2	34	974	6	49	793
Future Volume (Veh/h)	2	34	974	6	49	793
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.69	0.69	0.96	0.96	0.94	0.94
Hourly flow rate (vph)	3	49	1015	6	52	844
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh			2			2
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1966	1018			1021	
vC1, stage 1 conf vol	1018					
vC2, stage 2 conf vol	948					
vCu, unblocked vol	1966	1018			1021	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	83			92	
cM capacity (veh/h)	250	291			688	
Direction, Lane #	WB 1	NB 1	SB 1	SB 2		
Volume Total	52	1021	52	844		
Volume Left	3	0	52	0		
Volume Right	49	6	0	0		
cSH	288	1700	688	1700		
Volume to Capacity	0.18	0.60	0.08	0.50		
Queue Length 95th (ft)	16	0	6	0		
Control Delay (s)	20.2	0.0	10.7	0.0		
Lane LOS	C		B			
Approach Delay (s)	20.2	0.0	0.6			
Approach LOS	C					
Intersection Summary						
Average Delay			0.8			
Intersection Capacity Utilization			61.6%		ICU Level of Service	B
Analysis Period (min)			15			

Lanes, Volumes, Timings
6: Lowell Road & County Road (S)

PM 2023 BASE











						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	61	9	1019	250	7	786
Future Volume (vph)	61	9	1019	250	7	786
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	50	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.983		0.973			
Flt Protected	0.958				0.950	
Satd. Flow (prot)	1759	0	1830	0	1805	1881
Flt Permitted	0.958				0.950	
Satd. Flow (perm)	1759	0	1830	0	1805	1881
Link Speed (mph)	30		30			30
Link Distance (ft)	940		200			200
Travel Time (s)	21.4		4.5			4.5
Peak Hour Factor	0.81	0.81	0.94	0.94	0.92	0.92
Heavy Vehicles (%)	2%	0%	1%	1%	0%	1%
Adj. Flow (vph)	75	11	1084	266	8	854
Shared Lane Traffic (%)						
Lane Group Flow (vph)	86	0	1350	0	8	854
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other
Control Type: Unsignalized











HCM Unsignalized Intersection Capacity Analysis
6: Lowell Road & County Road (S)

PM 2023 BASE

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	61	9	1019	250	7	786
Future Volume (Veh/h)	61	9	1019	250	7	786
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.81	0.81	0.94	0.94	0.92	0.92
Hourly flow rate (vph)	75	11	1084	266	8	854
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh			2			2
Upstream signal (ft)			1300			
pX, platoon unblocked	0.34	0.34			0.34	
vC, conflicting volume	2087	1217			1350	
vC1, stage 1 conf vol	1217					
vC2, stage 2 conf vol	870					
vCu, unblocked vol	3251	656			1053	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	50	93			96	
cM capacity (veh/h)	150	157			224	
Direction, Lane #	WB 1	NB 1	SB 1	SB 2		
Volume Total	86	1350	8	854		
Volume Left	75	0	8	0		
Volume Right	11	266	0	0		
cSH	151	1700	224	1700		
Volume to Capacity	0.57	0.79	0.04	0.50		
Queue Length 95th (ft)	73	0	3	0		
Control Delay (s)	56.6	0.0	21.6	0.0		
Lane LOS	F		C			
Approach Delay (s)	56.6	0.0	0.2			
Approach LOS	F					
Intersection Summary						
Average Delay			2.2			
Intersection Capacity Utilization			79.4%		ICU Level of Service	D
Analysis Period (min)			15			

Lanes, Volumes, Timings
8: Lowell Road & Atwood Ave

PM 2023 BASE

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	7	20	6	1262	835	12
Future Volume (vph)	7	20	6	1262	835	12
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	50			0
Storage Lanes	1	0	1			0
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.900				0.998	
Flt Protected	0.987		0.950			
Satd. Flow (prot)	1688	0	1805	1881	1878	0
Flt Permitted	0.987		0.950			
Satd. Flow (perm)	1688	0	1805	1881	1878	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	410			1100	200	
Travel Time (s)	9.3			25.0	4.5	
Peak Hour Factor	0.54	0.54	0.92	0.92	0.91	0.91
Heavy Vehicles (%)	0%	0%	0%	1%	1%	0%
Adj. Flow (vph)	13	37	7	1372	918	13
Shared Lane Traffic (%)						
Lane Group Flow (vph)	50	0	7	1372	931	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane				Yes	Yes	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	











Intersection Summary

Area Type: Other
Control Type: Unsignalized

HCM Unsignalized Intersection Capacity Analysis












8: Lowell Road & Atwood Ave

PM 2023 BASE

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	7	20	6	1262	835	12
Future Volume (Veh/h)	7	20	6	1262	835	12
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.54	0.54	0.92	0.92	0.91	0.91
Hourly flow rate (vph)	13	37	7	1372	918	13
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh				2	2	
Upstream signal (ft)				1100		
pX, platoon unblocked	0.33					
vC, conflicting volume	2310	924	931			
vC1, stage 1 conf vol	924					
vC2, stage 2 conf vol	1386					
vCu, unblocked vol	3964	924	931			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.2			
p0 queue free %	86	89	99			
cM capacity (veh/h)	92	329	743			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1		
Volume Total	50	7	1372	931		
Volume Left	13	7	0	0		
Volume Right	37	0	0	13		
cSH	197	743	1700	1700		
Volume to Capacity	0.25	0.01	0.81	0.55		
Queue Length 95th (ft)	24	1	0	0		
Control Delay (s)	29.4	9.9	0.0	0.0		
Lane LOS	D	A				
Approach Delay (s)	29.4	0.1		0.0		
Approach LOS	D					
Intersection Summary						
Average Delay			0.7			
Intersection Capacity Utilization			76.4%		ICU Level of Service	D
Analysis Period (min)			15			

Lanes, Volumes, Timings
9: Lowell Road & Pelham Road

PM 2023 BASE

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	115	161	1197	104	114	756
Future Volume (vph)	115	161	1197	104	114	756
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	12	12	12	12
Storage Length (ft)	0	100		0	160	
Storage Lanes	1	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850	0.989			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1794	1842	0	1770	1863
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1794	1842	0	1770	1863
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		83	7			
Link Speed (mph)	30		30			30
Link Distance (ft)	1206		847			1100
Travel Time (s)	27.4		19.3			25.0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	128	179	1330	116	127	840
Shared Lane Traffic (%)						
Lane Group Flow (vph)	128	179	1446	0	127	840
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						Yes
Headway Factor	1.00	0.85	1.00	1.00	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
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)	20.0		24.0		10.0	24.0
Total Split (s)	30.0		100.0		10.0	110.0
Total Split (%)	21.4%		71.4%		7.1%	78.6%
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)	-2.0		-2.0		-2.0	-2.0
Total Lost Time (s)	4.0		4.0		4.0	4.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		C-Min		None	C-Min
v/c Ratio	0.63	0.34	1.14		0.63	0.54
Control Delay	72.6	24.3	97.5		74.2	5.7

Lanes, Volumes, Timings
 9: Lowell Road & Pelham Road

PM 2023 BASE

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	72.6	24.3	97.5		74.2	5.7
Queue Length 50th (ft)	113	69	~1540		112	192
Queue Length 95th (ft)	176	139	#1810		#254	338
Internal Link Dist (ft)	1126		767			1020
Turn Bay Length (ft)		100			160	
Base Capacity (vph)	328	522	1265		201	1543
Starvation Cap Reductn	0	0	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.39	0.34	1.14		0.63	0.54

Intersection Summary












Area Type: Other
 Cycle Length: 140
 Actuated Cycle Length: 140
 Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated
 ~ 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 & Pelham Road



HCM Signalized Intersection Capacity Analysis
 9: Lowell Road & Pelham Road

PM 2023 BASE













						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	115	161	1197	104	114	756
Future Volume (vph)	115	161	1197	104	114	756
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	0.99		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	1794	1843		1770	1863
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1770	1794	1843		1770	1863
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	128	179	1330	116	127	840
RTOR Reduction (vph)	0	62	2	0	0	0
Lane Group Flow (vph)	128	117	1444	0	127	840
Turn Type	Prot	pt+ov	NA		Prot	NA
Protected Phases	4	4 5	6		5	2
Permitted Phases						
Actuated Green, G (s)	14.0	34.0	94.0		14.0	114.0
Effective Green, g (s)	16.0	36.0	96.0		16.0	116.0
Actuated g/C Ratio	0.11	0.26	0.69		0.11	0.83
Clearance Time (s)	6.0		6.0		6.0	6.0
Vehicle Extension (s)	1.5		1.5		1.5	1.5
Lane Grp Cap (vph)	202	461	1263		202	1543
v/s Ratio Prot	c0.07	0.07	c0.78		c0.07	0.45
v/s Ratio Perm						
v/c Ratio	0.63	0.25	1.14		0.63	0.54
Uniform Delay, d1	59.2	41.3	22.0		59.2	3.7
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	4.7	0.1	74.3		4.4	1.4
Delay (s)	63.9	41.4	96.3		63.5	5.1
Level of Service	E	D	F		E	A
Approach Delay (s)	50.8		96.3			12.8
Approach LOS	D		F			B

Intersection Summary

HCM 2000 Control Delay	61.5	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	92.0%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			







Lanes, Volumes, Timings
3: Central Street & Lowell Road

PM 2024 NoBUILD

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	225	788	899	153	224	116
Future Volume (vph)	225	788	899	153	224	116
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	14	12	12
Storage Length (ft)	300			80	0	120
Storage Lanes	1			1	1	0
Taper Length (ft)	50				50	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1863	1863	1689	1770	1583
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1863	1863	1689	1770	1583
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				107		83
Link Speed (mph)		30	30		30	
Link Distance (ft)		688	860		450	
Travel Time (s)		15.6	19.5		10.2	
Peak Hour Factor	0.92	0.92	0.87	0.87	0.88	0.88
Adj. Flow (vph)	245	857	1033	176	255	132
Shared Lane Traffic (%)						
Lane Group Flow (vph)	245	857	1033	176	255	132
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	0.92	1.00	1.00
Turning Speed (mph)	15			9	15	9
Turn Type	Prot	NA	NA	pm+ov	Prot	pm+ov
Protected Phases	1	2	2	3	3	1
Permitted Phases		1		2		3
Detector Phase	1	2	2	3	3	1
Switch Phase						
Minimum Initial (s)	8.0	10.0	10.0	10.0	10.0	8.0
Minimum Split (s)	20.0	24.0	24.0	24.0	24.0	20.0
Total Split (s)	20.0	60.0	60.0	25.0	25.0	20.0
Total Split (%)	19.0%	57.1%	57.1%	23.8%	23.8%	19.0%
Yellow Time (s)	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
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag			Lead
Lead-Lag Optimize?	Yes	Yes	Yes			Yes
Recall Mode	None	None	None	None	None	None
v/c Ratio	0.90	0.63	1.02	0.13	0.77	0.20
Control Delay	78.3	9.5	59.3	1.5	56.5	9.7

Lanes, Volumes, Timings
 3: Central Street & Lowell Road

PM 2024 NoBUILD

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	78.3	9.5	59.3	1.5	56.5	9.7
Queue Length 50th (ft)	164	254	~753	9	161	20
Queue Length 95th (ft)	#310	365	#942	22	#250	58
Internal Link Dist (ft)		608	780		370	
Turn Bay Length (ft)	300			80		120
Base Capacity (vph)	274	1370	1010	1348	360	653
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	0.63	1.02	0.13	0.71	0.20

Intersection Summary

Area Type: Other
 Cycle Length: 105
 Actuated Cycle Length: 103.3
 Natural Cycle: 100
 Control Type: Actuated-Uncoordinated
 ~ 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: 3: Central Street & Lowell Road



HCM Signalized Intersection Capacity Analysis











3: Central Street & Lowell Road

PM 2024 NoBUILD

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	225	788	899	153	224	116
Future Volume (vph)	225	788	899	153	224	116
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	14	12	12
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1863	1863	1689	1770	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	1863	1863	1689	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.87	0.87	0.88	0.88
Adj. Flow (vph)	245	857	1033	176	255	132
RTOR Reduction (vph)	0	0	0	29	0	55
Lane Group Flow (vph)	245	857	1033	147	255	77
Turn Type	Prot	NA	NA	pm+ov	Prot	pm+ov
Protected Phases	1	2	2	3	3	1
Permitted Phases		1		2		3
Actuated Green, G (s)	13.9	67.9	54.0	71.3	17.3	31.2
Effective Green, g (s)	15.9	71.9	56.0	75.3	19.3	35.2
Actuated g/C Ratio	0.15	0.70	0.54	0.73	0.19	0.34
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	1.5	2.5	2.5	2.5	2.5	1.5
Lane Grp Cap (vph)	272	1370	1010	1297	331	601
v/s Ratio Prot	c0.14	0.34	c0.55	0.02	c0.14	0.02
v/s Ratio Perm		0.12		0.07		0.03
v/c Ratio	0.90	0.63	1.02	0.11	0.77	0.13
Uniform Delay, d1	42.9	8.4	23.6	4.1	39.8	23.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	29.6	0.8	34.2	0.0	10.2	0.0
Delay (s)	72.5	9.2	57.8	4.1	50.0	23.5
Level of Service	E	A	E	A	D	C
Approach Delay (s)		23.3	50.0		41.0	
Approach LOS		C	D		D	
Intersection Summary						
HCM 2000 Control Delay			37.8		HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio			0.95			
Actuated Cycle Length (s)			103.2		Sum of lost time (s)	12.0
Intersection Capacity Utilization			82.2%		ICU Level of Service	E
Analysis Period (min)			15			
c Critical Lane Group						

Lanes, Volumes, Timings
 4: Lowell Road & County Road (N)

PM 2024 NoBUILD











						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	2	34	1050	6	50	857
Future Volume (vph)	2	34	1050	6	50	857
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	50	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.873		0.999			
Flt Protected	0.997				0.950	
Satd. Flow (prot)	1654	0	1879	0	1805	1881
Flt Permitted	0.997				0.950	
Satd. Flow (perm)	1654	0	1879	0	1805	1881
Link Speed (mph)	30		30			30
Link Distance (ft)	1120		950			1800
Travel Time (s)	25.5		21.6			40.9
Peak Hour Factor	0.69	0.69	0.96	0.96	0.94	0.94
Heavy Vehicles (%)	0%	0%	1%	0%	0%	1%
Adj. Flow (vph)	3	49	1094	6	53	912
Shared Lane Traffic (%)						
Lane Group Flow (vph)	52	0	1100	0	53	912
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other
 Control Type: Unsignalized











HCM Unsignalized Intersection Capacity Analysis
 4: Lowell Road & County Road (N)

PM 2024 NoBUILD

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	2	34	1050	6	50	857
Future Volume (Veh/h)	2	34	1050	6	50	857
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.69	0.69	0.96	0.96	0.94	0.94
Hourly flow rate (vph)	3	49	1094	6	53	912
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh			2			2
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2115	1097			1100	
vC1, stage 1 conf vol	1097					
vC2, stage 2 conf vol	1018					
vCu, unblocked vol	2115	1097			1100	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	81			92	
cM capacity (veh/h)	227	262			642	
Direction, Lane #	WB 1	NB 1	SB 1	SB 2		
Volume Total	52	1100	53	912		
Volume Left	3	0	53	0		
Volume Right	49	6	0	0		
cSH	259	1700	642	1700		
Volume to Capacity	0.20	0.65	0.08	0.54		
Queue Length 95th (ft)	18	0	7	0		
Control Delay (s)	22.3	0.0	11.1	0.0		
Lane LOS	C		B			
Approach Delay (s)	22.3	0.0	0.6			
Approach LOS	C					
Intersection Summary						
Average Delay			0.8			
Intersection Capacity Utilization			65.6%		ICU Level of Service	C
Analysis Period (min)			15			

Lanes, Volumes, Timings
6: Lowell Road & County Road (S)

PM 2024 NoBUILD

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	62	9	1096	253	7	850
Future Volume (vph)	62	9	1096	253	7	850
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	50	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.983		0.975			
Flt Protected	0.958				0.950	
Satd. Flow (prot)	1758	0	1834	0	1805	1881
Flt Permitted	0.958				0.950	
Satd. Flow (perm)	1758	0	1834	0	1805	1881
Link Speed (mph)	30		30			30
Link Distance (ft)	940		200			200
Travel Time (s)	21.4		4.5			4.5
Peak Hour Factor	0.81	0.81	0.94	0.94	0.92	0.92
Heavy Vehicles (%)	2%	0%	1%	1%	0%	1%
Adj. Flow (vph)	77	11	1166	269	8	924
Shared Lane Traffic (%)						
Lane Group Flow (vph)	88	0	1435	0	8	924
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free











Intersection Summary

Area Type: Other
Control Type: Unsignalized

HCM Unsignalized Intersection Capacity Analysis











6: Lowell Road & County Road (S)

PM 2024 NoBUILD

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	62	9	1096	253	7	850
Future Volume (Veh/h)	62	9	1096	253	7	850
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.81	0.81	0.94	0.94	0.92	0.92
Hourly flow rate (vph)	77	11	1166	269	8	924
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh			2			2
Upstream signal (ft)			1300			
pX, platoon unblocked	0.33	0.33			0.33	
vC, conflicting volume	2240	1300			1435	
vC1, stage 1 conf vol	1300					
vC2, stage 2 conf vol	940					
vCu, unblocked vol	3775	887			1300	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	34	90			95	
cM capacity (veh/h)	117	113			176	
Direction, Lane #	WB 1	NB 1	SB 1	SB 2		
Volume Total	88	1435	8	924		
Volume Left	77	0	8	0		
Volume Right	11	269	0	0		
cSH	116	1700	176	1700		
Volume to Capacity	0.76	0.84	0.05	0.54		
Queue Length 95th (ft)	106	0	4	0		
Control Delay (s)	97.4	0.0	26.5	0.0		
Lane LOS	F		D			
Approach Delay (s)	97.4	0.0	0.2			
Approach LOS	F					
Intersection Summary						
Average Delay			3.6			
Intersection Capacity Utilization			83.7%		ICU Level of Service	E
Analysis Period (min)			15			

Lanes, Volumes, Timings
8: Lowell Road & Atwood Ave

PM 2024 NoBUILD











						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	7	20	6	1341	900	12
Future Volume (vph)	7	20	6	1341	900	12
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	50			0
Storage Lanes	1	0	1			0
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.900				0.998	
Flt Protected	0.987		0.950			
Satd. Flow (prot)	1688	0	1805	1881	1878	0
Flt Permitted	0.987		0.950			
Satd. Flow (perm)	1688	0	1805	1881	1878	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	410			1100	200	
Travel Time (s)	9.3			25.0	4.5	
Peak Hour Factor	0.54	0.54	0.92	0.92	0.91	0.91
Heavy Vehicles (%)	0%	0%	0%	1%	1%	0%
Adj. Flow (vph)	13	37	7	1458	989	13
Shared Lane Traffic (%)						
Lane Group Flow (vph)	50	0	7	1458	1002	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane				Yes	Yes	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized












HCM Unsignalized Intersection Capacity Analysis
 8: Lowell Road & Atwood Ave

PM 2024 NoBUILD

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	7	20	6	1341	900	12
Future Volume (Veh/h)	7	20	6	1341	900	12
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.54	0.54	0.92	0.92	0.91	0.91
Hourly flow rate (vph)	13	37	7	1458	989	13
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh				2	2	
Upstream signal (ft)				1100		
pX, platoon unblocked	0.32					
vC, conflicting volume	2468	996	1002			
vC1, stage 1 conf vol	996					
vC2, stage 2 conf vol	1472					
vCu, unblocked vol	4490	996	1002			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.2			
p0 queue free %	81	88	99			
cM capacity (veh/h)	69	299	699			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1		
Volume Total	50	7	1458	1002		
Volume Left	13	7	0	0		
Volume Right	37	0	0	13		
cSH	160	699	1700	1700		
Volume to Capacity	0.31	0.01	0.86	0.59		
Queue Length 95th (ft)	31	1	0	0		
Control Delay (s)	37.4	10.2	0.0	0.0		
Lane LOS	E	B				
Approach Delay (s)	37.4	0.0		0.0		
Approach LOS	E					
Intersection Summary						
Average Delay			0.8			
Intersection Capacity Utilization			80.6%		ICU Level of Service	D
Analysis Period (min)			15			

Lanes, Volumes, Timings
9: Lowell Road & Pelham Road

PM 2024 NoBUILD

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	116	163	1276	105	115	820
Future Volume (vph)	116	163	1276	105	115	820
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	12	12	12	12
Storage Length (ft)	0	100		0	160	
Storage Lanes	1	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850	0.990			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1794	1844	0	1770	1863
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1794	1844	0	1770	1863
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		69	7			
Link Speed (mph)	30		30			30
Link Distance (ft)	1206		847			1100
Travel Time (s)	27.4		19.3			25.0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	129	181	1418	117	128	911
Shared Lane Traffic (%)						
Lane Group Flow (vph)	129	181	1535	0	128	911
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						Yes
Headway Factor	1.00	0.85	1.00	1.00	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
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)	20.0		24.0		10.0	24.0
Total Split (s)	30.0		100.0		10.0	110.0
Total Split (%)	21.4%		71.4%		7.1%	78.6%
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)	-2.0		-2.0		-2.0	-2.0
Total Lost Time (s)	4.0		4.0		4.0	4.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		C-Min		None	C-Min
v/c Ratio	0.64	0.35	1.21		0.64	0.59
Control Delay	72.6	28.0	126.7		74.7	6.4

Lanes, Volumes, Timings
 9: Lowell Road & Pelham Road

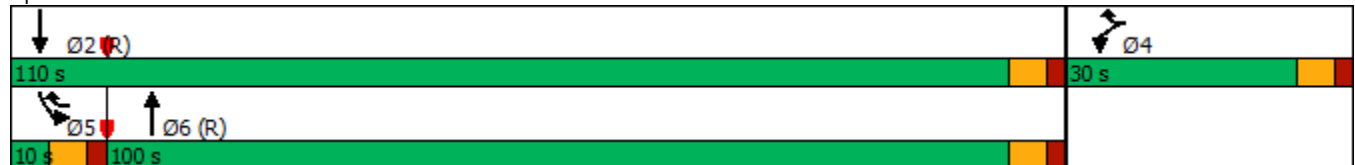
PM 2024 NoBUILD

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	72.6	28.0	126.7		74.7	6.4
Queue Length 50th (ft)	114	82	~1709		113	224
Queue Length 95th (ft)	178	152	#1979		#257	397
Internal Link Dist (ft)	1126		767			1020
Turn Bay Length (ft)		100			160	
Base Capacity (vph)	328	512	1266		201	1542
Starvation Cap Reductn	0	0	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.39	0.35	1.21		0.64	0.59

Intersection Summary












Area Type: Other
 Cycle Length: 140
 Actuated Cycle Length: 140
 Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated
 ~ 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 & Pelham Road



HCM Signalized Intersection Capacity Analysis
 9: Lowell Road & Pelham Road

PM 2024 NoBUILD













						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	116	163	1276	105	115	820
Future Volume (vph)	116	163	1276	105	115	820
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	0.99		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	1794	1844		1770	1863
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1770	1794	1844		1770	1863
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	129	181	1418	117	128	911
RTOR Reduction (vph)	0	51	2	0	0	0
Lane Group Flow (vph)	129	130	1533	0	128	911
Turn Type	Prot	pt+ov	NA		Prot	NA
Protected Phases	4	4 5	6		5	2
Permitted Phases						
Actuated Green, G (s)	14.1	34.0	94.0		13.9	113.9
Effective Green, g (s)	16.1	36.0	96.0		15.9	115.9
Actuated g/C Ratio	0.12	0.26	0.69		0.11	0.83
Clearance Time (s)	6.0		6.0		6.0	6.0
Vehicle Extension (s)	1.5		1.5		1.5	1.5
Lane Grp Cap (vph)	203	461	1264		201	1542
v/s Ratio Prot	c0.07	0.07	c0.83		0.07	c0.49
v/s Ratio Perm						
v/c Ratio	0.64	0.28	1.21		0.64	0.59
Uniform Delay, d1	59.1	41.6	22.0		59.3	4.1
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	4.7	0.1	103.2		4.8	1.7
Delay (s)	63.9	41.8	125.2		64.1	5.7
Level of Service	E	D	F		E	A
Approach Delay (s)	51.0		125.2			12.9
Approach LOS	D		F			B

Intersection Summary

HCM 2000 Control Delay	76.8	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	96.3%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			







Lanes, Volumes, Timings
3: Central Street & Lowell Road

PM 2034 NoBUILD

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	251	876	1000	171	250	130
Future Volume (vph)	251	876	1000	171	250	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	14	12	12
Storage Length (ft)	300			80	0	120
Storage Lanes	1			1	1	0
Taper Length (ft)	50				50	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1863	1863	1689	1770	1583
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1863	1863	1689	1770	1583
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				101		61
Link Speed (mph)		30	30		30	
Link Distance (ft)		688	860		450	
Travel Time (s)		15.6	19.5		10.2	
Peak Hour Factor	0.92	0.92	0.87	0.87	0.88	0.88
Adj. Flow (vph)	273	952	1149	197	284	148
Shared Lane Traffic (%)						
Lane Group Flow (vph)	273	952	1149	197	284	148
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	0.92	1.00	1.00
Turning Speed (mph)	15			9	15	9
Turn Type	Prot	NA	NA	pm+ov	Prot	pm+ov
Protected Phases	1	2	2	3	3	1
Permitted Phases		1		2		3
Detector Phase	1	2	2	3	3	1
Switch Phase						
Minimum Initial (s)	8.0	10.0	10.0	10.0	10.0	8.0
Minimum Split (s)	20.0	24.0	24.0	24.0	24.0	20.0
Total Split (s)	20.0	60.0	60.0	25.0	25.0	20.0
Total Split (%)	19.0%	57.1%	57.1%	23.8%	23.8%	19.0%
Yellow Time (s)	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
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag			Lead
Lead-Lag Optimize?	Yes	Yes	Yes			Yes
Recall Mode	None	None	None	None	None	None
v/c Ratio	1.01	0.70	1.15	0.15	0.83	0.23
Control Delay	101.6	11.5	103.2	1.7	61.8	13.5

Lanes, Volumes, Timings
 3: Central Street & Lowell Road

PM 2034 NoBUILD

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	101.6	11.5	103.2	1.7	61.8	13.5
Queue Length 50th (ft)	~189	312	~915	13	183	37
Queue Length 95th (ft)	#357	454	#1103	26	#302	78
Internal Link Dist (ft)		608	780		370	
Turn Bay Length (ft)	300			80		120
Base Capacity (vph)	271	1360	1002	1337	357	647
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	1.01	0.70	1.15	0.15	0.80	0.23

Intersection Summary













Area Type: Other
 Cycle Length: 105
 Actuated Cycle Length: 104.1
 Natural Cycle: 140
 Control Type: Actuated-Uncoordinated
 ~ 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: 3: Central Street & Lowell Road













HCM Signalized Intersection Capacity Analysis
 3: Central Street & Lowell Road

PM 2034 NoBUILD

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	251	876	1000	171	250	130
Future Volume (vph)	251	876	1000	171	250	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	14	12	12
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1863	1863	1689	1770	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	1863	1863	1689	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.87	0.87	0.88	0.88
Adj. Flow (vph)	273	952	1149	197	284	148
RTOR Reduction (vph)	0	0	0	27	0	40
Lane Group Flow (vph)	273	952	1149	170	284	108
Turn Type	Prot	NA	NA	pm+ov	Prot	pm+ov
Protected Phases	1	2	2	3	3	1
Permitted Phases		1		2		3
Actuated Green, G (s)	14.0	68.0	54.0	72.1	18.1	32.1
Effective Green, g (s)	16.0	72.0	56.0	76.1	20.1	36.1
Actuated g/C Ratio	0.15	0.69	0.54	0.73	0.19	0.35
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	1.5	2.5	2.5	2.5	2.5	1.5
Lane Grp Cap (vph)	272	1360	1002	1299	341	609
v/s Ratio Prot	c0.15	0.38	c0.62	0.03	c0.16	0.03
v/s Ratio Perm		0.13		0.08		0.04
v/c Ratio	1.00	0.70	1.15	0.13	0.83	0.18
Uniform Delay, d1	44.0	9.6	24.0	4.2	40.4	23.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	55.5	1.5	77.9	0.0	15.6	0.1
Delay (s)	99.6	11.1	102.0	4.2	55.9	23.7
Level of Service	F	B	F	A	E	C
Approach Delay (s)		30.8	87.7		44.9	
Approach LOS		C	F		D	
Intersection Summary						
HCM 2000 Control Delay			58.3		HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio			1.05			
Actuated Cycle Length (s)			104.1		Sum of lost time (s)	12.0
Intersection Capacity Utilization			90.4%		ICU Level of Service	E
Analysis Period (min)			15			
c Critical Lane Group						

Lanes, Volumes, Timings
 4: Lowell Road & County Road (N)

PM 2034 NoBUILD

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	2	39	1168	7	55	953
Future Volume (vph)	2	39	1168	7	55	953
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	50	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.872		0.999			
Flt Protected	0.998				0.950	
Satd. Flow (prot)	1653	0	1879	0	1805	1881
Flt Permitted	0.998				0.950	
Satd. Flow (perm)	1653	0	1879	0	1805	1881
Link Speed (mph)	30		30			30
Link Distance (ft)	1120		950			1800
Travel Time (s)	25.5		21.6			40.9
Peak Hour Factor	0.69	0.69	0.96	0.96	0.94	0.94
Heavy Vehicles (%)	0%	0%	1%	0%	0%	1%
Adj. Flow (vph)	3	57	1217	7	59	1014
Shared Lane Traffic (%)						
Lane Group Flow (vph)	60	0	1224	0	59	1014
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free











Intersection Summary

Area Type: Other
 Control Type: Unsignalized

HCM Unsignalized Intersection Capacity Analysis











4: Lowell Road & County Road (N)

PM 2034 NoBUILD

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	2	39	1168	7	55	953
Future Volume (Veh/h)	2	39	1168	7	55	953
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.69	0.69	0.96	0.96	0.94	0.94
Hourly flow rate (vph)	3	57	1217	7	59	1014
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage (veh)			2			2
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2352	1220			1224	
vC1, stage 1 conf vol	1220					
vC2, stage 2 conf vol	1132					
vCu, unblocked vol	2352	1220			1224	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	74			90	
cM capacity (veh/h)	194	222			577	
Direction, Lane #	WB 1	NB 1	SB 1	SB 2		
Volume Total	60	1224	59	1014		
Volume Left	3	0	59	0		
Volume Right	57	7	0	0		
cSH	220	1700	577	1700		
Volume to Capacity	0.27	0.72	0.10	0.60		
Queue Length 95th (ft)	27	0	9	0		
Control Delay (s)	27.4	0.0	12.0	0.0		
Lane LOS	D		B			
Approach Delay (s)	27.4	0.0	0.7			
Approach LOS	D					
Intersection Summary						
Average Delay			1.0			
Intersection Capacity Utilization			71.9%		ICU Level of Service	C
Analysis Period (min)			15			

Lanes, Volumes, Timings
6: Lowell Road & County Road (S)

PM 2034 NoBUILD

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	69	10	1219	283	8	945
Future Volume (vph)	69	10	1219	283	8	945
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	50	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.983		0.975			
Flt Protected	0.958				0.950	
Satd. Flow (prot)	1758	0	1834	0	1805	1881
Flt Permitted	0.958				0.950	
Satd. Flow (perm)	1758	0	1834	0	1805	1881
Link Speed (mph)	30		30			30
Link Distance (ft)	940		200			200
Travel Time (s)	21.4		4.5			4.5
Peak Hour Factor	0.81	0.81	0.94	0.94	0.92	0.92
Heavy Vehicles (%)	2%	0%	1%	1%	0%	1%
Adj. Flow (vph)	85	12	1297	301	9	1027
Shared Lane Traffic (%)						
Lane Group Flow (vph)	97	0	1598	0	9	1027
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free











Intersection Summary

Area Type: Other
Control Type: Unsignalized

HCM Unsignalized Intersection Capacity Analysis











6: Lowell Road & County Road (S)

PM 2034 NoBUILD

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	69	10	1219	283	8	945
Future Volume (Veh/h)	69	10	1219	283	8	945
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.81	0.81	0.94	0.94	0.92	0.92
Hourly flow rate (vph)	85	12	1297	301	9	1027
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh			2			2
Upstream signal (ft)			1300			
pX, platoon unblocked	0.33	0.33			0.33	
vC, conflicting volume	2492	1448			1598	
vC1, stage 1 conf vol	1448					
vC2, stage 2 conf vol	1045					
vCu, unblocked vol	4553	1339			1801	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	0	80			92	
cM capacity (veh/h)	74	61			113	
Direction, Lane #	WB 1	NB 1	SB 1	SB 2		
Volume Total	97	1598	9	1027		
Volume Left	85	0	9	0		
Volume Right	12	301	0	0		
cSH	72	1700	113	1700		
Volume to Capacity	1.35	0.94	0.08	0.60		
Queue Length 95th (ft)	195	0	6	0		
Control Delay (s)	323.8	0.0	39.7	0.0		
Lane LOS	F		E			
Approach Delay (s)	323.8	0.0	0.3			
Approach LOS	F					
Intersection Summary						
Average Delay			11.6			
Intersection Capacity Utilization			92.5%		ICU Level of Service	F
Analysis Period (min)			15			

Lanes, Volumes, Timings
8: Lowell Road & Atwood Ave

PM 2034 NoBUILD

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	7	20	6	1495	1001	12
Future Volume (vph)	7	20	6	1495	1001	12
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	50			0
Storage Lanes	1	0	1			0
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.900				0.998	
Flt Protected	0.987		0.950			
Satd. Flow (prot)	1688	0	1805	1881	1878	0
Flt Permitted	0.987		0.950			
Satd. Flow (perm)	1688	0	1805	1881	1878	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	410			1100	200	
Travel Time (s)	9.3			25.0	4.5	
Peak Hour Factor	0.54	0.54	0.92	0.92	0.91	0.91
Heavy Vehicles (%)	0%	0%	0%	1%	1%	0%
Adj. Flow (vph)	13	37	7	1625	1100	13
Shared Lane Traffic (%)						
Lane Group Flow (vph)	50	0	7	1625	1113	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane				Yes	Yes	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	











Intersection Summary

Area Type: Other
Control Type: Unsignalized

HCM Unsignalized Intersection Capacity Analysis












8: Lowell Road & Atwood Ave

PM 2034 NoBUILD

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	7	20	6	1495	1001	12
Future Volume (Veh/h)	7	20	6	1495	1001	12
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.54	0.54	0.92	0.92	0.91	0.91
Hourly flow rate (vph)	13	37	7	1625	1100	13
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh				2	2	
Upstream signal (ft)				1100		
pX, platoon unblocked	0.32					
vC, conflicting volume	2746	1106	1113			
vC1, stage 1 conf vol	1106					
vC2, stage 2 conf vol	1639					
vCu, unblocked vol	5350	1106	1113			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.2			
p0 queue free %	67	86	99			
cM capacity (veh/h)	39	258	635			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1		
Volume Total	50	7	1625	1113		
Volume Left	13	7	0	0		
Volume Right	37	0	0	13		
cSH	105	635	1700	1700		
Volume to Capacity	0.48	0.01	0.96	0.65		
Queue Length 95th (ft)	53	1	0	0		
Control Delay (s)	67.6	10.7	0.0	0.0		
Lane LOS	F	B				
Approach Delay (s)	67.6	0.0		0.0		
Approach LOS	F					
Intersection Summary						
Average Delay			1.2			
Intersection Capacity Utilization			88.7%		ICU Level of Service	E
Analysis Period (min)			15			

Lanes, Volumes, Timings
 9: Lowell Road & Pelham Road

PM 2034 NoBUILD

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	130	182	1419	118	129	910
Future Volume (vph)	130	182	1419	118	129	910
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	12	12	12	12
Storage Length (ft)	0	100		0	160	
Storage Lanes	1	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850	0.990			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1794	1844	0	1770	1863
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1794	1844	0	1770	1863
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		50	7			
Link Speed (mph)	30		30			30
Link Distance (ft)	1206		847			1100
Travel Time (s)	27.4		19.3			25.0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	144	202	1577	131	143	1011
Shared Lane Traffic (%)						
Lane Group Flow (vph)	144	202	1708	0	143	1011
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						Yes
Headway Factor	1.00	0.85	1.00	1.00	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
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)	20.0		24.0		10.0	24.0
Total Split (s)	30.0		100.0		10.0	110.0
Total Split (%)	21.4%		71.4%		7.1%	78.6%
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)	-2.0		-2.0		-2.0	-2.0
Total Lost Time (s)	4.0		4.0		4.0	4.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		C-Min		None	C-Min
v/c Ratio	0.66	0.41	1.35		0.77	0.66
Control Delay	72.4	34.9	185.9		86.8	8.2

Lanes, Volumes, Timings
 9: Lowell Road & Pelham Road

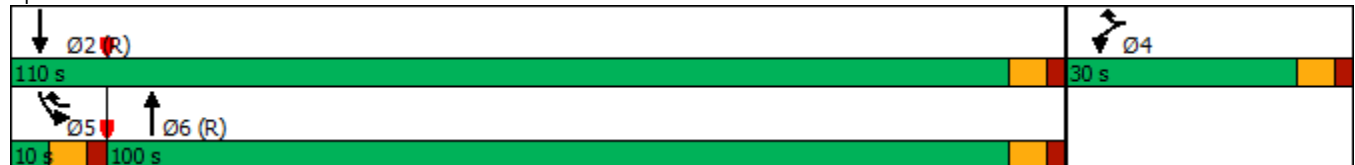
PM 2034 NoBUILD

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	72.4	34.9	185.9		86.8	8.2
Queue Length 50th (ft)	127	114	~2041		129	297
Queue Length 95th (ft)	193	192	#2309		#311	528
Internal Link Dist (ft)	1126		767			1020
Turn Bay Length (ft)		100			160	
Base Capacity (vph)	328	495	1266		186	1526
Starvation Cap Reductn	0	0	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.44	0.41	1.35		0.77	0.66

Intersection Summary












Area Type: Other
 Cycle Length: 140
 Actuated Cycle Length: 140
 Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated
 ~ 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 & Pelham Road



HCM Signalized Intersection Capacity Analysis
 9: Lowell Road & Pelham Road

PM 2034 NoBUILD













						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	130	182	1419	118	129	910
Future Volume (vph)	130	182	1419	118	129	910
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	0.99		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	1794	1843		1770	1863
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1770	1794	1843		1770	1863
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	144	202	1577	131	143	1011
RTOR Reduction (vph)	0	37	2	0	0	0
Lane Group Flow (vph)	144	165	1706	0	143	1011
Turn Type	Prot	pt+ov	NA		Prot	NA
Protected Phases	4	4 5	6		5	2
Permitted Phases						
Actuated Green, G (s)	15.3	34.0	94.0		12.7	112.7
Effective Green, g (s)	17.3	36.0	96.0		14.7	114.7
Actuated g/C Ratio	0.12	0.26	0.69		0.10	0.82
Clearance Time (s)	6.0		6.0		6.0	6.0
Vehicle Extension (s)	1.5		1.5		1.5	1.5
Lane Grp Cap (vph)	218	461	1263		185	1526
v/s Ratio Prot	c0.08	0.09	c0.93		c0.08	0.54
v/s Ratio Perm						
v/c Ratio	0.66	0.36	1.35		0.77	0.66
Uniform Delay, d1	58.5	42.5	22.0		61.0	5.0
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	5.7	0.2	163.1		16.5	2.3
Delay (s)	64.2	42.7	185.1		77.6	7.3
Level of Service	E	D	F		E	A
Approach Delay (s)	51.7		185.1			16.0
Approach LOS	D		F			B

Intersection Summary

HCM 2000 Control Delay	109.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.19		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	106.2%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			







Lanes, Volumes, Timings
3: Central Street & Lowell Road

PM 2024 BUILD

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	225	801	913	156	228	116
Future Volume (vph)	225	801	913	156	228	116
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	14	11	11
Storage Length (ft)	300			80	0	120
Storage Lanes	1			1	1	1
Taper Length (ft)	50				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t				0.850		0.850
Fl _t Protected	0.950				0.950	
Satd. Flow (prot)	1770	1863	1863	1689	1711	1531
Fl _t Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1863	1863	1689	1711	1531
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				108		79
Link Speed (mph)		30	30		30	
Link Distance (ft)		688	860		450	
Travel Time (s)		15.6	19.5		10.2	
Peak Hour Factor	0.92	0.92	0.87	0.87	0.88	0.88
Adj. Flow (vph)	245	871	1049	179	259	132
Shared Lane Traffic (%)						
Lane Group Flow (vph)	245	871	1049	179	259	132
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		11	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	0.92	1.04	1.04
Turning Speed (mph)	15			9	15	9
Turn Type	Prot	NA	NA	pm+ov	Prot	pm+ov
Protected Phases	1	2	2	3	3	1
Permitted Phases		1		2		3
Detector Phase	1	2	2	3	3	1
Switch Phase						
Minimum Initial (s)	8.0	10.0	10.0	5.0	5.0	8.0
Minimum Split (s)	20.0	24.0	24.0	11.0	11.0	20.0
Total Split (s)	20.0	60.0	60.0	25.0	25.0	20.0
Total Split (%)	19.0%	57.1%	57.1%	23.8%	23.8%	19.0%
Yellow Time (s)	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
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag			Lead
Lead-Lag Optimize?	Yes	Yes	Yes			Yes
Recall Mode	None	None	None	None	None	None
v/c Ratio	0.90	0.64	1.04	0.14	0.79	0.21
Control Delay	79.1	9.9	65.9	1.5	58.6	10.3

Lanes, Volumes, Timings
 3: Central Street & Lowell Road

PM 2024 BUILD

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	79.1	9.9	65.9	1.5	58.6	10.3
Queue Length 50th (ft)	164	262	~775	9	165	22
Queue Length 95th (ft)	#310	377	#965	22	#271	60
Internal Link Dist (ft)		608	780		370	
Turn Bay Length (ft)	300			80		120
Base Capacity (vph)	272	1363	1005	1341	346	635
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.90	0.64	1.04	0.13	0.75	0.21

Intersection Summary













Area Type: Other
 Cycle Length: 105
 Actuated Cycle Length: 103.8
 Natural Cycle: 90
 Control Type: Actuated-Uncoordinated
 ~ 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: 3: Central Street & Lowell Road













HCM Signalized Intersection Capacity Analysis
 3: Central Street & Lowell Road

PM 2024 BUILD

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	225	801	913	156	228	116
Future Volume (vph)	225	801	913	156	228	116
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	14	11	11
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1863	1863	1689	1711	1531
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	1863	1863	1689	1711	1531
Peak-hour factor, PHF	0.92	0.92	0.87	0.87	0.88	0.88
Adj. Flow (vph)	245	871	1049	179	259	132
RTOR Reduction (vph)	0	0	0	29	0	52
Lane Group Flow (vph)	245	871	1049	150	259	80
Turn Type	Prot	NA	NA	pm+ov	Prot	pm+ov
Protected Phases	1	2	2	3	3	1
Permitted Phases		1		2		3
Actuated Green, G (s)	14.0	68.0	54.0	71.8	17.8	31.8
Effective Green, g (s)	16.0	72.0	56.0	75.8	19.8	35.8
Actuated g/C Ratio	0.15	0.69	0.54	0.73	0.19	0.34
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	1.5	2.5	2.5	3.0	3.0	1.5
Lane Grp Cap (vph)	272	1364	1005	1298	326	587
v/s Ratio Prot	c0.14	0.34	c0.56	0.02	c0.15	0.02
v/s Ratio Perm		0.12		0.07		0.03
v/c Ratio	0.90	0.64	1.04	0.12	0.79	0.14
Uniform Delay, d1	43.1	8.7	23.9	4.1	40.1	23.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	29.6	0.9	40.5	0.0	12.5	0.0
Delay (s)	72.7	9.6	64.4	4.2	52.6	23.4
Level of Service	E	A	E	A	D	C
Approach Delay (s)		23.5	55.6		42.7	
Approach LOS		C	E		D	
Intersection Summary						
HCM 2000 Control Delay			40.7		HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio			0.96			
Actuated Cycle Length (s)			103.8		Sum of lost time (s)	12.0
Intersection Capacity Utilization			83.1%		ICU Level of Service	E
Analysis Period (min)			15			
c Critical Lane Group						

Lanes, Volumes, Timings
 4: Lowell Road & County Road (N)

PM 2024 BUILD

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	2	34	1066	6	50	873
Future Volume (vph)	2	34	1066	6	50	873
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	50	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.873		0.999			
Flt Protected	0.997				0.950	
Satd. Flow (prot)	1654	0	1879	0	1805	1881
Flt Permitted	0.997				0.950	
Satd. Flow (perm)	1654	0	1879	0	1805	1881
Link Speed (mph)	30		30			30
Link Distance (ft)	1120		950			1800
Travel Time (s)	25.5		21.6			40.9
Peak Hour Factor	0.69	0.69	0.96	0.96	0.94	0.94
Heavy Vehicles (%)	0%	0%	1%	0%	0%	1%
Adj. Flow (vph)	3	49	1110	6	53	929
Shared Lane Traffic (%)						
Lane Group Flow (vph)	52	0	1116	0	53	929
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free











Intersection Summary

Area Type: Other
 Control Type: Unsignalized

HCM Unsignalized Intersection Capacity Analysis












4: Lowell Road & County Road (N)

PM 2024 BUILD

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	2	34	1066	6	50	873
Future Volume (Veh/h)	2	34	1066	6	50	873
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.69	0.69	0.96	0.96	0.94	0.94
Hourly flow rate (vph)	3	49	1110	6	53	929
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage (veh)			2			2
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2148	1113			1116	
vC1, stage 1 conf vol	1113					
vC2, stage 2 conf vol	1035					
vCu, unblocked vol	2148	1113			1116	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	81			92	
cM capacity (veh/h)	222	256			633	
Direction, Lane #	WB 1	NB 1	SB 1	SB 2		
Volume Total	52	1116	53	929		
Volume Left	3	0	53	0		
Volume Right	49	6	0	0		
cSH	254	1700	633	1700		
Volume to Capacity	0.20	0.66	0.08	0.55		
Queue Length 95th (ft)	19	0	7	0		
Control Delay (s)	22.8	0.0	11.2	0.0		
Lane LOS	C		B			
Approach Delay (s)	22.8	0.0	0.6			
Approach LOS	C					
Intersection Summary						
Average Delay			0.8			
Intersection Capacity Utilization			66.5%		ICU Level of Service	C
Analysis Period (min)			15			

Lanes, Volumes, Timings
5: Lowell Road & Prop. Site Drive

PM 2024 BUILD

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	77	68	82	1044	809	64
Future Volume (vph)	77	68	82	1044	809	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	50	50			0
Storage Lanes	1	1	1			0
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.990	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1805	1615	1805	1881	1864	0
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1805	1615	1805	1881	1864	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	260			200	950	
Travel Time (s)	5.9			4.5	21.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	0%	1%	1%	0%
Adj. Flow (vph)	86	76	91	1160	899	71
Shared Lane Traffic (%)						
Lane Group Flow (vph)	86	76	91	1160	970	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane				Yes	Yes	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	












Intersection Summary

Area Type: Other
Control Type: Unsignalized

HCM Unsignalized Intersection Capacity Analysis











5: Lowell Road & Prop. Site Drive

PM 2024 BUILD

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	77	68	82	1044	809	64
Future Volume (Veh/h)	77	68	82	1044	809	64
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	86	76	91	1160	899	71
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)		2				
Median type				TWLTL	TWLTL	
Median storage veh				2	2	
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2276	934	970			
vC1, stage 1 conf vol	934					
vC2, stage 2 conf vol	1342					
vCu, unblocked vol	2276	934	970			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.2			
p0 queue free %	53	77	87			
cM capacity (veh/h)	185	325	719			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1		
Volume Total	162	91	1160	970		
Volume Left	86	91	0	0		
Volume Right	76	0	0	71		
cSH	348	719	1700	1700		
Volume to Capacity	0.47	0.13	0.68	0.57		
Queue Length 95th (ft)	59	11	0	0		
Control Delay (s)	30.6	10.7	0.0	0.0		
Lane LOS	D	B				
Approach Delay (s)	30.6	0.8		0.0		
Approach LOS	D					
Intersection Summary						
Average Delay			2.5			
Intersection Capacity Utilization			65.9%		ICU Level of Service	C
Analysis Period (min)			15			

Lanes, Volumes, Timings
6: Lowell Road & County Road (S)

PM 2024 BUILD











						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	62	9	1117	253	7	870
Future Volume (vph)	62	9	1117	253	7	870
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	50	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.983		0.975			
Flt Protected	0.958				0.950	
Satd. Flow (prot)	1758	0	1834	0	1805	1881
Flt Permitted	0.958				0.950	
Satd. Flow (perm)	1758	0	1834	0	1805	1881
Link Speed (mph)	30		30			30
Link Distance (ft)	940		200			200
Travel Time (s)	21.4		4.5			4.5
Peak Hour Factor	0.81	0.81	0.94	0.94	0.92	0.92
Heavy Vehicles (%)	2%	0%	1%	1%	0%	1%
Adj. Flow (vph)	77	11	1188	269	8	946
Shared Lane Traffic (%)						
Lane Group Flow (vph)	88	0	1457	0	8	946
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other
Control Type: Unsignalized










HCM Unsignalized Intersection Capacity Analysis
 6: Lowell Road & County Road (S)

PM 2024 BUILD

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	62	9	1117	253	7	870
Future Volume (Veh/h)	62	9	1117	253	7	870
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.81	0.81	0.94	0.94	0.92	0.92
Hourly flow rate (vph)	77	11	1188	269	8	946
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh			2			2
Upstream signal (ft)			1300			
pX, platoon unblocked	0.33	0.33			0.33	
vC, conflicting volume	2284	1322			1457	
vC1, stage 1 conf vol	1322					
vC2, stage 2 conf vol	962					
vCu, unblocked vol	3913	954			1368	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	30	89			95	
cM capacity (veh/h)	109	103			165	
Direction, Lane #	WB 1	NB 1	SB 1	SB 2		
Volume Total	88	1457	8	946		
Volume Left	77	0	8	0		
Volume Right	11	269	0	0		
cSH	108	1700	165	1700		
Volume to Capacity	0.81	0.86	0.05	0.56		
Queue Length 95th (ft)	115	0	4	0		
Control Delay (s)	113.8	0.0	27.9	0.0		
Lane LOS	F		D			
Approach Delay (s)	113.8	0.0	0.2			
Approach LOS	F					
Intersection Summary						
Average Delay			4.1			
Intersection Capacity Utilization			84.8%		ICU Level of Service	E
Analysis Period (min)			15			

Lanes, Volumes, Timings
7: Atwood Ave & Prop. Site Drive

PM 2024 BUILD

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	1	27	18	0	2	0
Future Volume (vph)	1	27	18	0	2	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected		0.998			0.950	
Satd. Flow (prot)	0	1859	1863	0	1770	0
Flt Permitted		0.998			0.950	
Satd. Flow (perm)	0	1859	1863	0	1770	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		364	410		243	
Travel Time (s)		8.3	9.3		5.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	1	30	20	0	2	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	31	20	0	2	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	










Intersection Summary

Area Type: Other
Control Type: Unsignalized

HCM Unsignalized Intersection Capacity Analysis











7: Atwood Ave & Prop. Site Drive

PM 2024 BUILD

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	1	27	18	0	2	0
Future Volume (Veh/h)	1	27	18	0	2	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	1	30	20	0	2	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	20				52	20
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	20				52	20
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1596				956	1058
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	31	20	2			
Volume Left	1	0	2			
Volume Right	0	0	0			
cSH	1596	1700	956			
Volume to Capacity	0.00	0.01	0.00			
Queue Length 95th (ft)	0	0	0			
Control Delay (s)	0.2	0.0	8.8			
Lane LOS	A		A			
Approach Delay (s)	0.2	0.0	8.8			
Approach LOS			A			
Intersection Summary						
Average Delay			0.5			
Intersection Capacity Utilization			13.3%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
8: Lowell Road & Atwood Ave

PM 2024 BUILD











						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	8	21	6	1361	920	12
Future Volume (vph)	8	21	6	1361	920	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	50			0
Storage Lanes	1	0	1			0
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.902				0.998	
Flt Protected	0.986		0.950			
Satd. Flow (prot)	1690	0	1805	1881	1878	0
Flt Permitted	0.986		0.950			
Satd. Flow (perm)	1690	0	1805	1881	1878	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	410			1100	200	
Travel Time (s)	9.3			25.0	4.5	
Peak Hour Factor	0.54	0.54	0.92	0.92	0.91	0.91
Heavy Vehicles (%)	0%	0%	0%	1%	1%	0%
Adj. Flow (vph)	15	39	7	1479	1011	13
Shared Lane Traffic (%)						
Lane Group Flow (vph)	54	0	7	1479	1024	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane				Yes	Yes	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized












HCM Unsignalized Intersection Capacity Analysis
 8: Lowell Road & Atwood Ave

PM 2024 BUILD

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	8	21	6	1361	920	12
Future Volume (Veh/h)	8	21	6	1361	920	12
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.54	0.54	0.92	0.92	0.91	0.91
Hourly flow rate (vph)	15	39	7	1479	1011	13
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh				2	2	
Upstream signal (ft)				1100		
pX, platoon unblocked	0.32					
vC, conflicting volume	2510	1018	1024			
vC1, stage 1 conf vol	1018					
vC2, stage 2 conf vol	1493					
vCu, unblocked vol	4623	1018	1024			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.2			
p0 queue free %	77	87	99			
cM capacity (veh/h)	64	291	686			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1		
Volume Total	54	7	1479	1024		
Volume Left	15	7	0	0		
Volume Right	39	0	0	13		
cSH	147	686	1700	1700		
Volume to Capacity	0.37	0.01	0.87	0.60		
Queue Length 95th (ft)	39	1	0	0		
Control Delay (s)	43.2	10.3	0.0	0.0		
Lane LOS	E	B				
Approach Delay (s)	43.2	0.0		0.0		
Approach LOS	E					
Intersection Summary						
Average Delay			0.9			
Intersection Capacity Utilization			81.6%		ICU Level of Service	D
Analysis Period (min)			15			

Lanes, Volumes, Timings
9: Lowell Road & Pelham Road

PM 2024 BUILD

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	116	166	1293	105	118	838
Future Volume (vph)	116	166	1293	105	118	838
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	12	12	12	12
Storage Length (ft)	0	100		0	160	
Storage Lanes	1	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850	0.990			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1794	1844	0	1770	1863
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1794	1844	0	1770	1863
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		66	7			
Link Speed (mph)	30		30			30
Link Distance (ft)	1206		847			1100
Travel Time (s)	27.4		19.3			25.0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	129	184	1437	117	131	931
Shared Lane Traffic (%)						
Lane Group Flow (vph)	129	184	1554	0	131	931
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						Yes
Headway Factor	1.00	0.85	1.00	1.00	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
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)	20.0		24.0		10.0	24.0
Total Split (s)	30.0		100.0		10.0	110.0
Total Split (%)	21.4%		71.4%		7.1%	78.6%
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)	-2.0		-2.0		-2.0	-2.0
Total Lost Time (s)	4.0		4.0		4.0	4.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		C-Min		None	C-Min
v/c Ratio	0.64	0.36	1.23		0.65	0.60
Control Delay	72.6	29.1	133.1		75.6	6.6

Lanes, Volumes, Timings
 9: Lowell Road & Pelham Road

PM 2024 BUILD

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	72.6	29.1	133.1		75.6	6.6
Queue Length 50th (ft)	114	86	~1745		116	234
Queue Length 95th (ft)	178	158	#2016		#263	415
Internal Link Dist (ft)	1126		767			1020
Turn Bay Length (ft)		100			160	
Base Capacity (vph)	328	510	1266		201	1542
Starvation Cap Reductn	0	0	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.39	0.36	1.23		0.65	0.60

Intersection Summary












Area Type: Other
 Cycle Length: 140
 Actuated Cycle Length: 140
 Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated
 ~ 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 & Pelham Road



HCM Signalized Intersection Capacity Analysis
 9: Lowell Road & Pelham Road

PM 2024 BUILD













						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	116	166	1293	105	118	838
Future Volume (vph)	116	166	1293	105	118	838
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	0.99		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	1794	1844		1770	1863
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1770	1794	1844		1770	1863
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	129	184	1437	117	131	931
RTOR Reduction (vph)	0	49	2	0	0	0
Lane Group Flow (vph)	129	135	1552	0	131	931
Turn Type	Prot	pt+ov	NA		Prot	NA
Protected Phases	4	4 5	6		5	2
Permitted Phases						
Actuated Green, G (s)	14.1	34.0	94.0		13.9	113.9
Effective Green, g (s)	16.1	36.0	96.0		15.9	115.9
Actuated g/C Ratio	0.12	0.26	0.69		0.11	0.83
Clearance Time (s)	6.0		6.0		6.0	6.0
Vehicle Extension (s)	1.5		1.5		1.5	1.5
Lane Grp Cap (vph)	203	461	1264		201	1542
v/s Ratio Prot	c0.07	0.08	c0.84		0.07	c0.50
v/s Ratio Perm						
v/c Ratio	0.64	0.29	1.23		0.65	0.60
Uniform Delay, d1	59.1	41.8	22.0		59.4	4.1
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	4.7	0.1	109.6		5.7	1.8
Delay (s)	63.9	41.9	131.6		65.1	5.9
Level of Service	E	D	F		E	A
Approach Delay (s)	51.0		131.6			13.2
Approach LOS	D		F			B

Intersection Summary

HCM 2000 Control Delay	80.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.08		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	97.4%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			







Lanes, Volumes, Timings
3: Central Street & Lowell Road

PM 2034 BUILD

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	251	889	1014	174	254	130
Future Volume (vph)	251	889	1014	174	254	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	14	11	11
Storage Length (ft)	300			80	0	120
Storage Lanes	1			1	1	1
Taper Length (ft)	50				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1863	1863	1689	1711	1531
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1863	1863	1689	1711	1531
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				101		58
Link Speed (mph)		30	30		30	
Link Distance (ft)		688	860		450	
Travel Time (s)		15.6	19.5		10.2	
Peak Hour Factor	0.92	0.92	0.87	0.87	0.88	0.88
Adj. Flow (vph)	273	966	1166	200	289	148
Shared Lane Traffic (%)						
Lane Group Flow (vph)	273	966	1166	200	289	148
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		11	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	0.92	1.04	1.04
Turning Speed (mph)	15			9	15	9
Turn Type	Prot	NA	NA	pm+ov	Prot	pm+ov
Protected Phases	1	2	2	3	3	1
Permitted Phases		1		2		3
Detector Phase	1	2	2	3	3	1
Switch Phase						
Minimum Initial (s)	8.0	10.0	10.0	5.0	5.0	8.0
Minimum Split (s)	20.0	24.0	24.0	11.0	11.0	20.0
Total Split (s)	20.0	60.0	60.0	25.0	25.0	20.0
Total Split (%)	19.0%	57.1%	57.1%	23.8%	23.8%	19.0%
Yellow Time (s)	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
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag			Lead
Lead-Lag Optimize?	Yes	Yes	Yes			Yes
Recall Mode	None	None	None	None	None	None
v/c Ratio	1.01	0.71	1.17	0.15	0.86	0.24
Control Delay	102.6	11.9	112.0	1.8	66.0	14.0

Lanes, Volumes, Timings
 3: Central Street & Lowell Road

PM 2034 BUILD

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	102.6	11.9	112.0	1.8	66.0	14.0
Queue Length 50th (ft)	~189	321	~939	13	188	39
Queue Length 95th (ft)	#357	470	#1129	27	#320	80
Internal Link Dist (ft)		608	780		370	
Turn Bay Length (ft)	300			80		120
Base Capacity (vph)	270	1355	998	1332	344	628
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	1.01	0.71	1.17	0.15	0.84	0.24

Intersection Summary













Area Type: Other
 Cycle Length: 105
 Actuated Cycle Length: 104.5
 Natural Cycle: 130
 Control Type: Actuated-Uncoordinated
 ~ 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: 3: Central Street & Lowell Road



HCM Signalized Intersection Capacity Analysis
 3: Central Street & Lowell Road

PM 2034 BUILD











						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	251	889	1014	174	254	130
Future Volume (vph)	251	889	1014	174	254	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	14	11	11
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1863	1863	1689	1711	1531
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	1863	1863	1689	1711	1531
Peak-hour factor, PHF	0.92	0.92	0.87	0.87	0.88	0.88
Adj. Flow (vph)	273	966	1166	200	289	148
RTOR Reduction (vph)	0	0	0	27	0	38
Lane Group Flow (vph)	273	966	1166	173	289	110
Turn Type	Prot	NA	NA	pm+ov	Prot	pm+ov
Protected Phases	1	2	2	3	3	1
Permitted Phases		1		2		3
Actuated Green, G (s)	14.0	68.0	54.0	72.5	18.5	32.5
Effective Green, g (s)	16.0	72.0	56.0	76.5	20.5	36.5
Actuated g/C Ratio	0.15	0.69	0.54	0.73	0.20	0.35
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	1.5	2.5	2.5	3.0	3.0	1.5
Lane Grp Cap (vph)	271	1354	998	1301	335	593
v/s Ratio Prot	c0.15	0.38	c0.63	0.03	c0.17	0.03
v/s Ratio Perm		0.14		0.08		0.04
v/c Ratio	1.01	0.71	1.17	0.13	0.86	0.19
Uniform Delay, d1	44.2	9.9	24.2	4.2	40.6	23.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	56.6	1.7	86.7	0.0	19.8	0.1
Delay (s)	100.8	11.6	110.9	4.2	60.5	23.7
Level of Service	F	B	F	A	E	C
Approach Delay (s)		31.3	95.3		48.0	
Approach LOS		C	F		D	

Intersection Summary

HCM 2000 Control Delay	62.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	104.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	91.3%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings
 4: Lowell Road & County Road (N)

PM 2034 BUILD











						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	2	39	1184	7	55	969
Future Volume (vph)	2	39	1184	7	55	969
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	50	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.872		0.999			
Flt Protected	0.998				0.950	
Satd. Flow (prot)	1653	0	1879	0	1805	1881
Flt Permitted	0.998				0.950	
Satd. Flow (perm)	1653	0	1879	0	1805	1881
Link Speed (mph)	30		30			30
Link Distance (ft)	1120		950			1800
Travel Time (s)	25.5		21.6			40.9
Peak Hour Factor	0.69	0.69	0.96	0.96	0.94	0.94
Heavy Vehicles (%)	0%	0%	1%	0%	0%	1%
Adj. Flow (vph)	3	57	1233	7	59	1031
Shared Lane Traffic (%)						
Lane Group Flow (vph)	60	0	1240	0	59	1031
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other
 Control Type: Unsignalized












HCM Unsignalized Intersection Capacity Analysis
 4: Lowell Road & County Road (N)

PM 2034 BUILD

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	2	39	1184	7	55	969
Future Volume (Veh/h)	2	39	1184	7	55	969
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.69	0.69	0.96	0.96	0.94	0.94
Hourly flow rate (vph)	3	57	1233	7	59	1031
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage (veh)			2			2
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2386	1236			1240	
vC1, stage 1 conf vol	1236					
vC2, stage 2 conf vol	1149					
vCu, unblocked vol	2386	1236			1240	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	74			90	
cM capacity (veh/h)	190	217			569	
Direction, Lane #	WB 1	NB 1	SB 1	SB 2		
Volume Total	60	1240	59	1031		
Volume Left	3	0	59	0		
Volume Right	57	7	0	0		
cSH	215	1700	569	1700		
Volume to Capacity	0.28	0.73	0.10	0.61		
Queue Length 95th (ft)	27	0	9	0		
Control Delay (s)	28.1	0.0	12.1	0.0		
Lane LOS	D		B			
Approach Delay (s)	28.1	0.0	0.7			
Approach LOS	D					
Intersection Summary						
Average Delay			1.0			
Intersection Capacity Utilization			72.7%		ICU Level of Service	C
Analysis Period (min)			15			

Lanes, Volumes, Timings
5: Lowell Road & Prop. Site Drive

PM 2034 BUILD












						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	77	68	82	1068	905	64
Future Volume (vph)	77	68	82	1068	905	64
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	50	50			0
Storage Lanes	1	1	1			0
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.991	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1770	1583	1770	1863	1846	0
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1770	1583	1770	1863	1846	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	260			200	950	
Travel Time (s)	5.9			4.5	21.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	86	76	91	1187	1006	71
Shared Lane Traffic (%)						
Lane Group Flow (vph)	86	76	91	1187	1077	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane				Yes	Yes	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized











HCM Unsignalized Intersection Capacity Analysis
 5: Lowell Road & Prop. Site Drive

PM 2034 BUILD

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	77	68	82	1068	905	64
Future Volume (Veh/h)	77	68	82	1068	905	64
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	86	76	91	1187	1006	71
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)		2				
Median type				TWLTL	TWLTL	
Median storage veh				2	2	
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2410	1042	1077			
vC1, stage 1 conf vol	1042					
vC2, stage 2 conf vol	1369					
vCu, unblocked vol	2410	1042	1077			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.2			
p0 queue free %	50	73	86			
cM capacity (veh/h)	170	279	647			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1		
Volume Total	162	91	1187	1077		
Volume Left	86	91	0	0		
Volume Right	76	0	0	71		
cSH	321	647	1700	1700		
Volume to Capacity	0.50	0.14	0.70	0.63		
Queue Length 95th (ft)	67	12	0	0		
Control Delay (s)	35.0	11.5	0.0	0.0		
Lane LOS	D	B				
Approach Delay (s)	35.0	0.8		0.0		
Approach LOS	D					
Intersection Summary						
Average Delay			2.7			
Intersection Capacity Utilization			70.3%	ICU Level of Service		C
Analysis Period (min)			15			

Lanes, Volumes, Timings
6: Lowell Road & County Road (S)

PM 2034 BUILD











						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	69	10	1240	283	8	965
Future Volume (vph)	69	10	1240	283	8	965
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	50	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.983		0.975			
Flt Protected	0.958				0.950	
Satd. Flow (prot)	1758	0	1834	0	1805	1881
Flt Permitted	0.958				0.950	
Satd. Flow (perm)	1758	0	1834	0	1805	1881
Link Speed (mph)	30		30			30
Link Distance (ft)	940		200			200
Travel Time (s)	21.4		4.5			4.5
Peak Hour Factor	0.81	0.81	0.94	0.94	0.92	0.92
Heavy Vehicles (%)	2%	0%	1%	1%	0%	1%
Adj. Flow (vph)	85	12	1319	301	9	1049
Shared Lane Traffic (%)						
Lane Group Flow (vph)	97	0	1620	0	9	1049
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane			Yes			Yes
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other
Control Type: Unsignalized










HCM Unsignalized Intersection Capacity Analysis
6: Lowell Road & County Road (S)

PM 2034 BUILD

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	69	10	1240	283	8	965
Future Volume (Veh/h)	69	10	1240	283	8	965
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.81	0.81	0.94	0.94	0.92	0.92
Hourly flow rate (vph)	85	12	1319	301	9	1049
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh			2			2
Upstream signal (ft)			1300			
pX, platoon unblocked	0.33	0.33			0.33	
vC, conflicting volume	2536	1470			1620	
vC1, stage 1 conf vol	1470					
vC2, stage 2 conf vol	1067					
vCu, unblocked vol	4688	1406			1869	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	0	79			92	
cM capacity (veh/h)	69	56			106	
Direction, Lane #	WB 1	NB 1	SB 1	SB 2		
Volume Total	97	1620	9	1049		
Volume Left	85	0	9	0		
Volume Right	12	301	0	0		
cSH	67	1700	106	1700		
Volume to Capacity	1.45	0.95	0.08	0.62		
Queue Length 95th (ft)	205	0	7	0		
Control Delay (s)	373.9	0.0	42.0	0.0		
Lane LOS	F		E			
Approach Delay (s)	373.9	0.0	0.4			
Approach LOS	F					
Intersection Summary						
Average Delay			13.2			
Intersection Capacity Utilization			93.6%		ICU Level of Service	F
Analysis Period (min)			15			

Lanes, Volumes, Timings
7: Atwood Ave & Prop. Site Drive

PM 2034 BUILD










						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	1	27	18	0	2	0
Future Volume (vph)	1	27	18	0	2	0
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected		0.998			0.950	
Satd. Flow (prot)	0	1859	1863	0	1770	0
Flt Permitted		0.998			0.950	
Satd. Flow (perm)	0	1859	1863	0	1770	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		364	410		243	
Travel Time (s)		8.3	9.3		5.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	1	30	20	0	2	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	31	20	0	2	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized











HCM Unsignalized Intersection Capacity Analysis
 7: Atwood Ave & Prop. Site Drive

PM 2034 BUILD

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	1	27	18	0	2	0
Future Volume (Veh/h)	1	27	18	0	2	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	1	30	20	0	2	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	20				52	20
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	20				52	20
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1596				956	1058
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	31	20	2			
Volume Left	1	0	2			
Volume Right	0	0	0			
cSH	1596	1700	956			
Volume to Capacity	0.00	0.01	0.00			
Queue Length 95th (ft)	0	0	0			
Control Delay (s)	0.2	0.0	8.8			
Lane LOS	A		A			
Approach Delay (s)	0.2	0.0	8.8			
Approach LOS			A			
Intersection Summary						
Average Delay			0.5			
Intersection Capacity Utilization			13.3%	ICU Level of Service		A
Analysis Period (min)			15			

Lanes, Volumes, Timings
8: Lowell Road & Atwood Ave

PM 2034 BUILD











						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	8	21	6	1515	1021	12
Future Volume (vph)	8	21	6	1515	1021	12
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	50			0
Storage Lanes	1	0	1			0
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.902				0.998	
Flt Protected	0.986		0.950			
Satd. Flow (prot)	1690	0	1805	1881	1878	0
Flt Permitted	0.986		0.950			
Satd. Flow (perm)	1690	0	1805	1881	1878	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	410			1100	200	
Travel Time (s)	9.3			25.0	4.5	
Peak Hour Factor	0.54	0.54	0.92	0.92	0.91	0.91
Heavy Vehicles (%)	0%	0%	0%	1%	1%	0%
Adj. Flow (vph)	15	39	7	1647	1122	13
Shared Lane Traffic (%)						
Lane Group Flow (vph)	54	0	7	1647	1135	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane				Yes	Yes	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized












HCM Unsignalized Intersection Capacity Analysis
 8: Lowell Road & Atwood Ave

PM 2034 BUILD

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	8	21	6	1515	1021	12
Future Volume (Veh/h)	8	21	6	1515	1021	12
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.54	0.54	0.92	0.92	0.91	0.91
Hourly flow rate (vph)	15	39	7	1647	1122	13
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh				2	2	
Upstream signal (ft)				1100		
pX, platoon unblocked	0.32					
vC, conflicting volume	2790	1128	1135			
vC1, stage 1 conf vol	1128					
vC2, stage 2 conf vol	1661					
vCu, unblocked vol	5486	1128	1135			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.2			
p0 queue free %	58	84	99			
cM capacity (veh/h)	36	251	623			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1		
Volume Total	54	7	1647	1135		
Volume Left	15	7	0	0		
Volume Right	39	0	0	13		
cSH	94	623	1700	1700		
Volume to Capacity	0.57	0.01	0.97	0.67		
Queue Length 95th (ft)	66	1	0	0		
Control Delay (s)	85.3	10.8	0.0	0.0		
Lane LOS	F	B				
Approach Delay (s)	85.3	0.0		0.0		
Approach LOS	F					
Intersection Summary						
Average Delay			1.6			
Intersection Capacity Utilization			89.7%		ICU Level of Service	E
Analysis Period (min)			15			

Lanes, Volumes, Timings
9: Lowell Road & Pelham Road

PM 2034 BUILD

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	130	185	1436	118	132	928
Future Volume (vph)	130	185	1436	118	132	928
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	12	12	12	12
Storage Length (ft)	0	100		0	160	
Storage Lanes	1	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850	0.990			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1794	1844	0	1770	1863
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1794	1844	0	1770	1863
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		48	7			
Link Speed (mph)	30		30			30
Link Distance (ft)	1206		847			1100
Travel Time (s)	27.4		19.3			25.0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	144	206	1596	131	147	1031
Shared Lane Traffic (%)						
Lane Group Flow (vph)	144	206	1727	0	147	1031
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						Yes
Headway Factor	1.00	0.85	1.00	1.00	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
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)	20.0		24.0		10.0	24.0
Total Split (s)	30.0		100.0		10.0	110.0
Total Split (%)	21.4%		71.4%		7.1%	78.6%
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)	-2.0		-2.0		-2.0	-2.0
Total Lost Time (s)	4.0		4.0		4.0	4.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		C-Min		None	C-Min
v/c Ratio	0.66	0.42	1.36		0.79	0.68
Control Delay	72.4	35.7	192.5		89.2	8.5

Lanes, Volumes, Timings
 9: Lowell Road & Pelham Road

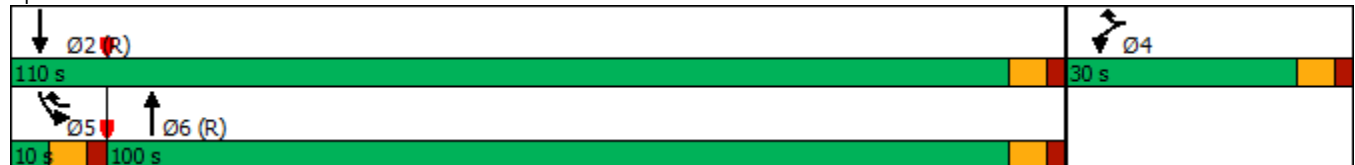
PM 2034 BUILD

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	72.4	35.7	192.5		89.2	8.5
Queue Length 50th (ft)	127	119	~2077		133	310
Queue Length 95th (ft)	193	197	#2345		#319	554
Internal Link Dist (ft)	1126		767			1020
Turn Bay Length (ft)		100			160	
Base Capacity (vph)	328	493	1266		186	1526
Starvation Cap Reductn	0	0	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.44	0.42	1.36		0.79	0.68

Intersection Summary

Area Type: Other
 Cycle Length: 140
 Actuated Cycle Length: 140
 Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated
 ~ 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 & Pelham Road



HCM Signalized Intersection Capacity Analysis

9: Lowell Road & Pelham Road

PM 2034 BUILD

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	130	185	1436	118	132	928
Future Volume (vph)	130	185	1436	118	132	928
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	0.99		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	1794	1844		1770	1863
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1770	1794	1844		1770	1863
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	144	206	1596	131	147	1031
RTOR Reduction (vph)	0	36	2	0	0	0
Lane Group Flow (vph)	144	170	1725	0	147	1031
Turn Type	Prot	pt+ov	NA		Prot	NA
Protected Phases	4	4 5	6		5	2
Permitted Phases						
Actuated Green, G (s)	15.3	34.0	94.0		12.7	112.7
Effective Green, g (s)	17.3	36.0	96.0		14.7	114.7
Actuated g/C Ratio	0.12	0.26	0.69		0.10	0.82
Clearance Time (s)	6.0		6.0		6.0	6.0
Vehicle Extension (s)	1.5		1.5		1.5	1.5
Lane Grp Cap (vph)	218	461	1264		185	1526
v/s Ratio Prot	c0.08	0.09	c0.94		c0.08	0.55
v/s Ratio Perm						
v/c Ratio	0.66	0.37	1.36		0.79	0.68
Uniform Delay, d1	58.5	42.7	22.0		61.2	5.1
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	5.7	0.2	169.2		19.3	2.4
Delay (s)	64.2	42.9	191.2		80.5	7.5
Level of Service	E	D	F		F	A
Approach Delay (s)	51.7		191.2			16.6
Approach LOS	D		F			B

Intersection Summary

HCM 2000 Control Delay	113.0	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.20		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	107.2%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

APPENDIX H

Printed
8/02/2023
8:35AM
Created
8/02/2023
8:34 AM

Transaction Receipt
Town of Hudson, NH
12 School Street
Hudson, NH 03051-4249

RECEIVED
AUG 03 2023

Receipt# 741,173
cjefferson

<u>Description</u>		<u>Current Invoice</u>	<u>Payment</u>		
1.00	Police Reports				
	Crash Analysis Reports (x4)				
	Police Reports	0.00	100.0000		
			Total:		100.00
Remitter	Pay Type	Reference	Tendered	Change	Net Paid
TFM - CJ	CHECK	24263	100.00	0.00	100.00
			Total Due:		100.00
			Total Tendered:		100.00
			Total Change:		0.00
			Net Paid:		100.00



TOWN OF HUDSON

Police Department

Partners with the Community

1 Constitution Drive, Hudson, New Hampshire 03051
Voice/TTY (603) 886-6011/Crime Line (603) 594-1150/Fax (603) 886-0605



Tad Dionne
Chief of Police

Captain David Cayot
Special Investigations Bureau

Captain Patrick McStravick
Operations Bureau

Captain Steven McElhinney
Support Services Bureau

July 26, 2023

TF Morgan, Inc.
Attention: Jennifer Porter, PE
48 Constitution Drive
Bedford, NH 03110

Three year (January 1, 2020 thru July 25, 2023) traffic study Lowell Road at Atwood Avenue, Hudson, New Hampshire.

Compiled by: Colleen Jefferson, Records Division

Motor Vehicle Accidents: 4 Vehicle vs Vehicle

Number of Vehicles: 7

Number of Persons: 8

Injuries/Fatalities: None reported

Property Damage: 2 properties

Time of Day:

3am to 7am: 0

7am to 11am: 1

11am to 3pm: 2

3pm to 7pm: 1 (5pm)

7pm to 11pm: 0

11pm to 3am: 0

Time of Year:

January: 2

August: 1

November: 1

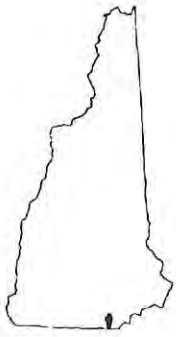
Weather Conditions:

Dry: 3

Wet: 1



A NATIONALLY ACCREDITED LAW ENFORCEMENT AGENCY



TOWN OF HUDSON

Police Department

Partners with the Community

1 Constitution Drive, Hudson, New Hampshire 03051
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Support Services Bureau

July 26, 2023

TF Morgan, Inc.
Attention: Jennifer Porter, PE
48 Constitution Drive
Bedford, NH 03110

Three year (January 1, 2020 thru July 25, 2023) traffic study Lowell Road at Central Street, Hudson, New Hampshire.

Completed by: Colleen Jefferson, Records Division

Motor Vehicle Accidents: 11 Vehicle vs Vehicle

Number of Vehicles: 21

Number of Persons: 28

Injuries/Fatalities: 4 injuries reported

Property Damage: 1 property

Time of Day:

3am to 7am: 0

7am to 11am: 3 (7am x2, 9am)

11am to 3pm: 2 (1pm, 3pm)

3pm to 7pm: 5 (4pm, 5pm, 7pm x3)

7pm to 11pm: 1 (8pm)

11pm to 3am: 0

Time of Year:

March: 3

April: 2

May: 1

June: 1

September: 1

October: 3

Weather Conditions:

Dry: 10

Wet: 1



A NATIONALLY ACCREDITED LAW ENFORCEMENT AGENCY



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Operations Bureau

Captain Steven McElhinney
Support Services Bureau

July 26, 2023

TF Morgan, Inc.
Attention: Jennifer Porter, PE
48 Constitution Drive
Bedford, NH 03110

Three year (January 1, 2020 thru July 25, 2023) traffic study Lowell Road at County Road, Hudson, New Hampshire.

Compiled by: Colleen Jefferson, Records Division

Motor Vehicle Accidents: 21 Vehicle vs Vehicle
1 Vehicle vs Bicyclist

Number of Vehicles: 40

Number of Persons: 54

Injuries/Fatalities: 8 injuries reported

Property Damage: 7 property

Time of Day:

3am to 7am: 1 (6am)

7am to 11am: 3 (7am, 9am, 11am)

11am to 3pm: 5 (1pm x3, 3pm x2)

3pm to 7pm: 13 (4pm x2, 5pm x6, 6pm x4, 7pm)

7pm to 11pm: 0

11pm to 3am: 0

Time of Year:

January: 4

February: 2

March: 2

June: 1

July: 3

August: 3

October: 2

November: 5

Weather Conditions:

Dry: 19

Wet: 1

Snow: 1

Slush: 1



A NATIONALLY ACCREDITED LAW ENFORCEMENT AGENCY



TOWN OF HUDSON

Police Department

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1 Constitution Drive, Hudson, New Hampshire 03051
Voice/TTY (603) 886-6011/Crime Line (603) 594-1150/Fax (603) 886-0605



Tad Dionne
Chief of Police

Captain David Cayot
Special Investigations Bureau

Captain Patrick McStravick
Operations Bureau

Captain Steven McElhinney
Support Services Bureau

July 26, 2023

TF Morgan, Inc.
Attention: Jennifer Porter, PE
48 Constitution Drive
Bedford, NH 03110

Three year (January 1, 2020 thru July 25, 2023) traffic study Lowell Road at Pelham Road, Hudson, New Hampshire.

Compiled by: Colleen Jefferson, Records Division

Motor Vehicle Accidents: 14 Vehicle vs Vehicle

Number of Vehicles: 23

Number of Persons: 37

Injuries/Fatalities: 1 injury reported

Property Damage: 0 property

Time of Day:

3am to 7am: 1 (5am)

7am to 11am: 6 (9am x2, 10am x2, 11am x2)

11am to 3pm: 5 (12pm x2, 2pm x2, 3pm)

3pm to 7pm: 2 (5pm, 6pm)

7pm to 11pm: 0

11pm to 3am: 0

Time of Year:

January: 2

February: 2

April: 1

May: 2

June: 1

July: 1

August: 1

September: 1

October: 1

November: 1

December: 1

Weather Conditions:

Dry: 12

Wet: 2



A NATIONALLY ACCREDITED LAW ENFORCEMENT AGENCY

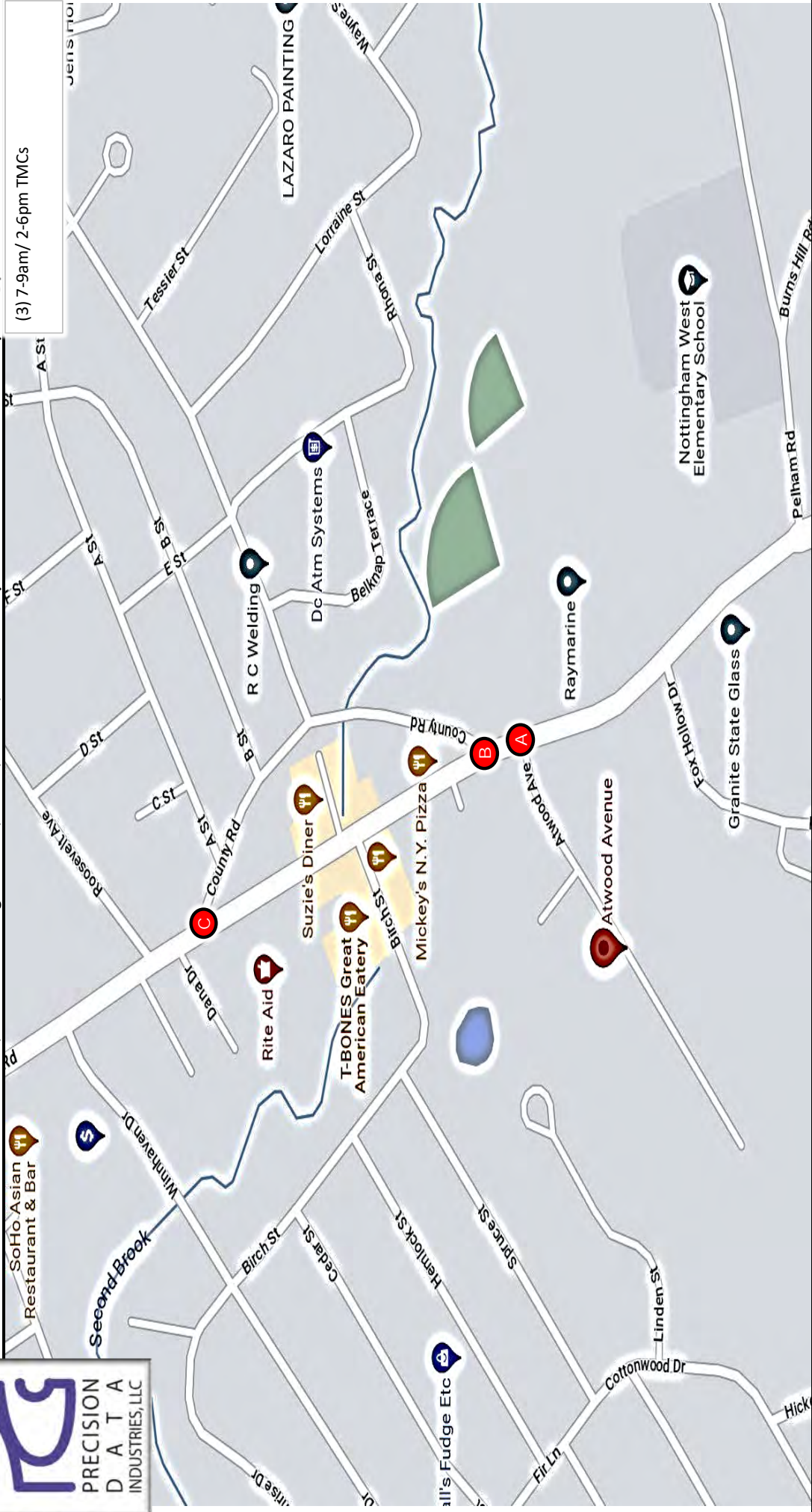
APPENDIX I



Location Map: 239338 Hudson, NH

Precision Data Industries, LLC 157 Washington Street, Suite 2, Hudson, MA 01749 ph: 508-875-0100 email: datarequests@pdillc.com

(3) 7-9am/ 2-6pm TMCs



Client: TF Moran	Engineer: J. Porter	Site Code: 18149.00	Date: Thursday 5/4/2023	PDI Job # 239338	City, State: Hudson, NH
---------------------	------------------------	------------------------	----------------------------	---------------------	----------------------------

PDI File #: **239338 A**
 Location: **N: Lowell Road (Route 3A) S: Lowell Road (Route 3A)**
 Location: **W: Atwood Avenue**
 City, State: **Hudson, NH**
 Client: **TF Moran/ J. Porter**
 Site Code: **18149.00**
 Count Date: **Thursday, May 4, 2023**
 Start Time: **7:00 AM**
 End Time: **9:00 AM**



157 Washington Street, Suite 2
 Hudson, MA 01749
 508-875-0100 datarequests@pdillc.com
 Email: datarequests@pdillc.com

Cars and Heavy Vehicles (Combined)

	Lowell Road (Route 3A)				Lowell Road (Route 3A)				Atwood Avenue				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
7:00 AM	1	220	0	221	142	0	0	142	1	3	0	4	367
7:15 AM	5	229	0	234	140	2	0	142	3	2	0	5	381
7:30 AM	6	246	0	252	149	2	0	151	1	5	0	6	409
7:45 AM	8	276	0	284	140	5	0	145	5	4	0	9	438
Total	20	971	0	991	571	9	0	580	10	14	0	24	1595
8:00 AM	7	219	0	226	143	3	0	146	4	6	0	10	382
8:15 AM	2	199	0	201	121	1	0	122	3	2	0	5	328
8:30 AM	4	214	0	218	189	0	0	189	3	2	0	5	412
8:45 AM	2	225	0	227	159	3	0	162	3	5	0	8	397
Total	15	857	0	872	612	7	0	619	13	15	0	28	1519
Grand Total	35	1828	0	1863	1183	16	0	1199	23	29	0	52	3114
Approach %	1.9	98.1	0.0		98.7	1.3	0.0		44.2	55.8	0.0		
Total %	1.1	58.7	0.0	59.8	38.0	0.5	0.0	38.5	0.7	0.9	0.0	1.7	
Exiting Leg Total				1212				1851				51	3114
Cars	34	1750	0	1784	1098	16	0	1114	22	29	0	51	2949
% Cars	97.1	95.7	0.0	95.8	92.8	100.0	0.0	92.9	95.7	100.0	0.0	98.1	94.7
Exiting Leg Total				1127				1772				50	2949
Heavy Vehicles	1	78	0	79	85	0	0	85	1	0	0	1	165
% Heavy Vehicles	2.9	4.3	0.0	4.2	7.2	0.0	0.0	7.1	4.3	0.0	0.0	1.9	5.3
Exiting Leg Total				85				79				1	165

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

	Lowell Road (Route 3A)				Lowell Road (Route 3A)				Atwood Avenue				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
7:15 AM	5	229	0	234	140	2	0	142	3	2	0	5	381
7:30 AM	6	246	0	252	149	2	0	151	1	5	0	6	409
7:45 AM	8	276	0	284	140	5	0	145	5	4	0	9	438
8:00 AM	7	219	0	226	143	3	0	146	4	6	0	10	382
Total Volume	26	970	0	996	572	12	0	584	13	17	0	30	1610
% Approach Total	2.6	97.4	0.0		97.9	2.1	0.0		43.3	56.7	0.0		
PHF	0.813	0.879	0.000	0.877	0.960	0.600	0.000	0.967	0.650	0.708	0.000	0.750	0.919
Cars	26	936	0	962	544	12	0	556	13	17	0	30	1548
Cars %	100.0	96.5	0.0	96.6	95.1	100.0	0.0	95.2	100.0	100.0	0.0	100.0	96.1
Heavy Vehicles	0	34	0	34	28	0	0	28	0	0	0	0	62
Heavy Vehicles %	0.0	3.5	0.0	3.4	4.9	0.0	0.0	4.8	0.0	0.0	0.0	0.0	3.9
Cars Enter Leg	26	936	0	962	544	12	0	556	13	17	0	30	1548
Heavy Enter Leg	0	34	0	34	28	0	0	28	0	0	0	0	62
Total Entering Leg	26	970	0	996	572	12	0	584	13	17	0	30	1610
Cars Exiting Leg				561				949				38	1548
Heavy Exiting Leg				28				34				0	62
Total Exiting Leg				589				983				38	1610

PDI File #: **239338 A**
 Location: **N: Lowell Road (Route 3A) S: Lowell Road (Route 3A)**
 Location: **W: Atwood Avenue**
 City, State: **Hudson, NH**
 Client: **TF Moran/ J. Porter**
 Site Code: **18149.00**
 Count Date: **Thursday, May 4, 2023**
 Start Time: **7:00 AM**
 End Time: **9:00 AM**
 Class:



PRECISION
 D A T A
 INDUSTRIES, LLC

157 Washington Street, Suite 2
 Hudson, MA 01749
 508-875-0100 datarequests@pdillc.com

Cars

	Lowell Road (Route 3A)				Lowell Road (Route 3A)				Atwood Avenue				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
7:00 AM	1	212	0	213	135	0	0	135	1	3	0	4	352
7:15 AM	5	223	0	228	132	2	0	134	3	2	0	5	367
7:30 AM	6	238	0	244	143	2	0	145	1	5	0	6	395
7:45 AM	8	266	0	274	133	5	0	138	5	4	0	9	421
Total	20	939	0	959	543	9	0	552	10	14	0	24	1535
8:00 AM	7	209	0	216	136	3	0	139	4	6	0	10	365
8:15 AM	2	187	0	189	104	1	0	105	3	2	0	5	299
8:30 AM	3	202	0	205	168	0	0	168	2	2	0	4	377
8:45 AM	2	213	0	215	147	3	0	150	3	5	0	8	373
Total	14	811	0	825	555	7	0	562	12	15	0	27	1414
Grand Total	34	1750	0	1784	1098	16	0	1114	22	29	0	51	2949
Approach %	1.9	98.1	0.0		98.6	1.4	0.0		43.1	56.9	0.0		
Total %	1.2	59.3	0.0	60.5	37.2	0.5	0.0	37.8	0.7	1.0	0.0	1.7	
Exiting Leg Total				1127				1772				50	2949

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

	Lowell Road (Route 3A)				Lowell Road (Route 3A)				Atwood Avenue				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
7:15 AM	5	223	0	228	132	2	0	134	3	2	0	5	367
7:30 AM	6	238	0	244	143	2	0	145	1	5	0	6	395
7:45 AM	8	266	0	274	133	5	0	138	5	4	0	9	421
8:00 AM	7	209	0	216	136	3	0	139	4	6	0	10	365
Total Volume	26	936	0	962	544	12	0	556	13	17	0	30	1548
% Approach Total	2.7	97.3	0.0		97.8	2.2	0.0		43.3	56.7	0.0		
PHF	0.813	0.880	0.000	0.878	0.951	0.600	0.000	0.959	0.650	0.708	0.000	0.750	0.919
Entering Leg	26	936	0	962	544	12	0	556	13	17	0	30	1548
Exiting Leg				561				949				38	1548
Total				1523				1505				68	3096

PDI File #: **239338 A**
 Location: **N: Lowell Road (Route 3A) S: Lowell Road (Route 3A)**
 Location: **W: Atwood Avenue**
 City, State: **Hudson, NH**
 Client: **TF Moran/ J. Porter**
 Site Code: **18149.00**
 Count Date: **Thursday, May 4, 2023**
 Start Time: **7:00 AM**
 End Time: **9:00 AM**



Class: **Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)**

	Lowell Road (Route 3A)				Lowell Road (Route 3A)				Atwood Avenue				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
7:00 AM	0	8	0	8	7	0	0	7	0	0	0	0	15
7:15 AM	0	6	0	6	8	0	0	8	0	0	0	0	14
7:30 AM	0	8	0	8	6	0	0	6	0	0	0	0	14
7:45 AM	0	10	0	10	7	0	0	7	0	0	0	0	17
Total	0	32	0	32	28	0	0	28	0	0	0	0	60
8:00 AM	0	10	0	10	7	0	0	7	0	0	0	0	17
8:15 AM	0	12	0	12	17	0	0	17	0	0	0	0	29
8:30 AM	1	12	0	13	21	0	0	21	1	0	0	1	35
8:45 AM	0	12	0	12	12	0	0	12	0	0	0	0	24
Total	1	46	0	47	57	0	0	57	1	0	0	1	105
Grand Total	1	78	0	79	85	0	0	85	1	0	0	1	165
Approach %	1.3	98.7	0.0		100.0	0.0	0.0		100.0	0.0	0.0		
Total %	0.6	47.3	0.0	47.9	51.5	0.0	0.0	51.5	0.6	0.0	0.0	0.6	
Exiting Leg Total				85				79				1	165
Buses	1	11	0	12	24	0	0	24	1	0	0	1	37
% Buses	100.0	14.1	0.0	15.2	28.2	0.0	0.0	28.2	100.0	0.0	0.0	100.0	22.4
Exiting Leg Total				24				12				1	37
Single-Unit Trucks	0	55	0	55	49	0	0	49	0	0	0	0	104
% Single-Unit	0.0	70.5	0.0	69.6	57.6	0.0	0.0	57.6	0.0	0.0	0.0	0.0	63.0
Exiting Leg Total				49				55				0	104
Articulated Trucks	0	12	0	12	12	0	0	12	0	0	0	0	24
% Articulated	0.0	15.4	0.0	15.2	14.1	0.0	0.0	14.1	0.0	0.0	0.0	0.0	14.5
Exiting Leg Total				12				12				0	24

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

	Lowell Road (Route 3A)				Lowell Road (Route 3A)				Atwood Avenue				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
8:00 AM	0	10	0	10	7	0	0	7	0	0	0	0	17
8:15 AM	0	12	0	12	17	0	0	17	0	0	0	0	29
8:30 AM	1	12	0	13	21	0	0	21	1	0	0	1	35
8:45 AM	0	12	0	12	12	0	0	12	0	0	0	0	24
Total Volume	1	46	0	47	57	0	0	57	1	0	0	1	105
% Approach Total	2.1	97.9	0.0		100.0	0.0	0.0		100.0	0.0	0.0		
PHF	0.250	0.958	0.000	0.904	0.679	0.000	0.000	0.679	0.250	0.000	0.000	0.250	0.750
Buses	1	7	0	8	20	0	0	20	1	0	0	1	29
Buses %	100.0	15.2	0.0	17.0	35.1	0.0	0.0	35.1	100.0	0.0	0.0	100.0	27.6
Single-Unit Trucks	0	31	0	31	28	0	0	28	0	0	0	0	59
Single-Unit %	0.0	67.4	0.0	66.0	49.1	0.0	0.0	49.1	0.0	0.0	0.0	0.0	56.2
Articulated Trucks	0	8	0	8	9	0	0	9	0	0	0	0	17
Articulated %	0.0	17.4	0.0	17.0	15.8	0.0	0.0	15.8	0.0	0.0	0.0	0.0	16.2
Buses	1	7	0	8	20	0	0	20	1	0	0	1	29
Single-Unit Trucks	0	31	0	31	28	0	0	28	0	0	0	0	59
Articulated Trucks	0	8	0	8	9	0	0	9	0	0	0	0	17
Total Entering Leg	1	46	0	47	57	0	0	57	1	0	0	1	105
Buses				20				8				1	29
Single-Unit Trucks				28				31				0	59
Articulated Trucks				9				8				0	17
Total Exiting Leg				57				47				1	105

PDI File #: **239338 A**
 Location: **N: Lowell Road (Route 3A) S: Lowell Road (Route 3A)**
 Location: **W: Atwood Avenue**
 City, State: **Hudson, NH**
 Client: **TF Moran/ J. Porter**
 Site Code: **18149.00**
 Count Date: **Thursday, May 4, 2023**
 Start Time: **7:00 AM**
 End Time: **9:00 AM**
 Class:



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 INDUSTRIES, LLC

157 Washington Street, Suite 2
 Hudson, MA 01749
 508-875-0100 datarequests@pdillc.com

Buses

	Lowell Road (Route 3A)				Lowell Road (Route 3A)				Atwood Avenue				Total	
	from North				from South				from West					
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	3	0	0	3	0	0	0	0	0	3
7:30 AM	0	1	0	1	1	0	0	1	0	0	0	0	0	2
7:45 AM	0	3	0	3	0	0	0	0	0	0	0	0	0	3
Total	0	4	0	4	4	0	0	4	0	0	0	0	0	8
8:00 AM	0	1	0	1	1	0	0	1	0	0	0	0	0	2
8:15 AM	0	4	0	4	9	0	0	9	0	0	0	0	0	13
8:30 AM	1	2	0	3	8	0	0	8	1	0	0	1	1	12
8:45 AM	0	0	0	0	2	0	0	2	0	0	0	0	0	2
Total	1	7	0	8	20	0	0	20	1	0	0	1	1	29
Grand Total	1	11	0	12	24	0	0	24	1	0	0	1	1	37
Approach %	8.3	91.7	0.0		100.0	0.0	0.0		100.0	0.0	0.0			
Total %	2.7	29.7	0.0	32.4	64.9	0.0	0.0	64.9	2.7	0.0	0.0	2.7		
Exiting Leg Total				24				12				1		37

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:45 AM	Lowell Road (Route 3A)				Lowell Road (Route 3A)				Atwood Avenue				Total	
	from North				from South				from West					
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total		
7:45 AM	0	3	0	3	0	0	0	0	0	0	0	0	0	3
8:00 AM	0	1	0	1	1	0	0	1	0	0	0	0	0	2
8:15 AM	0	4	0	4	9	0	0	9	0	0	0	0	0	13
8:30 AM	1	2	0	3	8	0	0	8	1	0	0	1	1	12
Total Volume	1	10	0	11	18	0	0	18	1	0	0	1	1	30
% Approach Total	9.1	90.9	0.0		100.0	0.0	0.0		100.0	0.0	0.0			
PHF	0.250	0.625	0.000	0.688	0.500	0.000	0.000	0.500	0.250	0.000	0.000	0.250		0.577
Entering Leg	1	10	0	11	18	0	0	18	1	0	0	1		30
Exiting Leg				18				11				1		30
Total				29				29				2		60

PDI File #: **239338 A**
 Location: **N: Lowell Road (Route 3A) S: Lowell Road (Route 3A)**
 Location: **W: Atwood Avenue**
 City, State: **Hudson, NH**
 Client: **TF Moran/ J. Porter**
 Site Code: **18149.00**
 Count Date: **Thursday, May 4, 2023**
 Start Time: **7:00 AM**
 End Time: **9:00 AM**



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Single-Unit Trucks

	Lowell Road (Route 3A)				Lowell Road (Route 3A)				Atwood Avenue				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
7:00 AM	0	6	0	6	5	0	0	5	0	0	0	0	11
7:15 AM	0	5	0	5	4	0	0	4	0	0	0	0	9
7:30 AM	0	7	0	7	5	0	0	5	0	0	0	0	12
7:45 AM	0	6	0	6	7	0	0	7	0	0	0	0	13
Total	0	24	0	24	21	0	0	21	0	0	0	0	45
8:00 AM	0	7	0	7	4	0	0	4	0	0	0	0	11
8:15 AM	0	7	0	7	6	0	0	6	0	0	0	0	13
8:30 AM	0	8	0	8	11	0	0	11	0	0	0	0	19
8:45 AM	0	9	0	9	7	0	0	7	0	0	0	0	16
Total	0	31	0	31	28	0	0	28	0	0	0	0	59
Grand Total	0	55	0	55	49	0	0	49	0	0	0	0	104
Approach %	0.0	100.0	0.0		100.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total %	0.0	52.9	0.0	52.9	47.1	0.0	0.0	47.1	0.0	0.0	0.0	0.0	
Exiting Leg Total				49				55					104

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

8:00 AM	Lowell Road (Route 3A)				Lowell Road (Route 3A)				Atwood Avenue				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
8:00 AM	0	7	0	7	4	0	0	4	0	0	0	0	11
8:15 AM	0	7	0	7	6	0	0	6	0	0	0	0	13
8:30 AM	0	8	0	8	11	0	0	11	0	0	0	0	19
8:45 AM	0	9	0	9	7	0	0	7	0	0	0	0	16
Total Volume	0	31	0	31	28	0	0	28	0	0	0	0	59
% Approach Total	0.0	100.0	0.0		100.0	0.0	0.0		0.0	0.0	0.0	0.0	
PHF	0.000	0.861	0.000	0.861	0.636	0.000	0.000	0.636	0.000	0.000	0.000	0.000	0.776
Entering Leg	0	31	0	31	28	0	0	28	0	0	0	0	59
Exiting Leg				28				31					59
Total				59				59					118

PDI File #: **239338 A**
 Location: **N: Lowell Road (Route 3A) S: Lowell Road (Route 3A)**
 Location: **W: Atwood Avenue**
 City, State: **Hudson, NH**
 Client: **TF Moran/ J. Porter**
 Site Code: **18149.00**
 Count Date: **Thursday, May 4, 2023**
 Start Time: **7:00 AM**
 End Time: **9:00 AM**
 Class:



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 INDUSTRIES, LLC

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Articulated Trucks

	Lowell Road (Route 3A)				Lowell Road (Route 3A)				Atwood Avenue				Total	
	from North				from South				from West					
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total		
7:00 AM	0	2	0	2	2	0	0	2	0	0	0	0	4	
7:15 AM	0	1	0	1	1	0	0	1	0	0	0	0	2	
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	
7:45 AM	0	1	0	1	0	0	0	0	0	0	0	0	1	
Total	0	4	0	4	3	0	0	3	0	0	0	0	7	
8:00 AM	0	2	0	2	2	0	0	2	0	0	0	0	4	
8:15 AM	0	1	0	1	2	0	0	2	0	0	0	0	3	
8:30 AM	0	2	0	2	2	0	0	2	0	0	0	0	4	
8:45 AM	0	3	0	3	3	0	0	3	0	0	0	0	6	
Total	0	8	0	8	9	0	0	9	0	0	0	0	17	
Grand Total	0	12	0	12	12	0	0	12	0	0	0	0	24	
Approach %	0.0	100.0	0.0		100.0	0.0	0.0		0.0	0.0	0.0	0.0		
Total %	0.0	50.0	0.0	50.0	50.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0		
Exiting Leg Total				12				12					0	24

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

8:00 AM	Lowell Road (Route 3A)				Lowell Road (Route 3A)				Atwood Avenue				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
8:00 AM	0	2	0	2	2	0	0	2	0	0	0	0	4
8:15 AM	0	1	0	1	2	0	0	2	0	0	0	0	3
8:30 AM	0	2	0	2	2	0	0	2	0	0	0	0	4
8:45 AM	0	3	0	3	3	0	0	3	0	0	0	0	6
Total Volume	0	8	0	8	9	0	0	9	0	0	0	0	17
% Approach Total	0.0	100.0	0.0		100.0	0.0	0.0		0.0	0.0	0.0		
PHF	0.000	0.667	0.000	0.667	0.750	0.000	0.000	0.750	0.000	0.000	0.000	0.000	0.708
Entering Leg	0	8	0	8	9	0	0	9	0	0	0	0	17
Exiting Leg				9				8					17
Total				17				17					34

PDI File #: **239338 A**
 Location: **N: Lowell Road (Route 3A) S: Lowell Road (Route 3A)**
 Location: **W: Atwood Avenue**
 City, State: **Hudson, NH**
 Client: **TF Moran/ J. Porter**
 Site Code: **18149.00**
 Count Date: **Thursday, May 4, 2023**
 Start Time: **7:00 AM**
 End Time: **9:00 AM**



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Bicycles (on Roadway and Crosswalks)

	Lowell Road (Route 3A)						Lowell Road (Route 3A)						Atwood Avenue						Total
	from North						from South						from West						
	Right	Thru	U-Turn	CW-EB	CW-WB	Total	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Left	U-Turn	CW-NB	CW-SB	Total	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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 %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Exiting Leg Total	0						0						0						0

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:00 AM	Lowell Road (Route 3A)						Lowell Road (Route 3A)						Atwood Avenue						Total
	from North						from South						from West						
	Right	Thru	U-Turn	CW-EB	CW-WB	Total	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Left	U-Turn	CW-NB	CW-SB	Total	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Approach Total	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exiting Leg	0						0						0						0
Total	0						0						0						0

PDI File #: **239338 A**
 Location: **N: Lowell Road (Route 3A) S: Lowell Road (Route 3A)**
 Location: **W: Atwood Avenue**
 City, State: **Hudson, NH**
 Client: **TF Moran/ J. Porter**
 Site Code: **18149.00**
 Count Date: **Thursday, May 4, 2023**
 Start Time: **7:00 AM**
 End Time: **9:00 AM**
 Class:



157 Washington Street, Suite 2
 Hudson, MA 01749
 508-875-0100 datarequests@pdillc.com

Pedestrians

	Lowell Road (Route 3A)						Lowell Road (Route 3A)						Atwood Avenue						Total	
	from North						from South						from West							
	Right	Thru	U-Turn	CW-EB	CW-WB	Total	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Left	U-Turn	CW-NB	CW-SB	Total		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	
Approach %	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	100	0	0	0	
Total %	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	100	0	100	0	
Exiting Leg Total	0						0						0						1	1

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

	Lowell Road (Route 3A)						Lowell Road (Route 3A)						Atwood Avenue						Total	
	from North						from South						from West							
	Right	Thru	U-Turn	CW-EB	CW-WB	Total	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Left	U-Turn	CW-NB	CW-SB	Total		
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	
% Approach Total	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.250	0.250	
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	
Exiting Leg	0						0						0						1	1
Total	0						0						0						2	2

PDI File #: **239338 A**
 Location: **N: Lowell Road (Route 3A) S: Lowell Road (Route 3A)**
 Location: **W: Atwood Avenue**
 City, State: **Hudson, NH**
 Client: **TF Moran/ J. Porter**
 Site Code: **18149.00**
 Count Date: **Thursday, May 4, 2023**
 Start Time: **2:00 PM**
 End Time: **6:00 PM**
 Class:



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 INDUSTRIES, LLC
 157 Washington Street, Suite 2
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Cars and Heavy Vehicles (Combined)

	Lowell Road (Route 3A)				Lowell Road (Route 3A)				Atwood Avenue				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
2:00 PM	0	203	0	203	224	1	0	225	0	0	0	0	428
2:15 PM	3	212	0	215	254	1	0	255	1	2	0	3	473
2:30 PM	3	212	0	215	235	1	0	236	2	1	0	3	454
2:45 PM	5	180	0	185	226	2	0	228	0	3	0	3	416
Total	11	807	0	818	939	5	0	944	3	6	0	9	1771
3:00 PM	1	193	0	194	285	1	0	286	5	3	0	8	488
3:15 PM	2	221	0	223	256	1	0	257	3	1	0	4	484
3:30 PM	3	186	0	189	275	2	0	277	1	0	0	1	467
3:45 PM	0	189	0	189	248	2	0	250	2	2	0	4	443
Total	6	789	0	795	1064	6	0	1070	11	6	0	17	1882
4:00 PM	4	167	0	171	272	5	0	277	2	6	0	8	456
4:15 PM	2	186	0	188	267	7	0	274	3	5	0	8	470
4:30 PM	5	203	0	208	282	2	0	284	5	4	0	9	501
4:45 PM	7	208	0	215	266	2	0	268	9	3	0	12	495
Total	18	764	0	782	1087	16	0	1103	19	18	0	37	1922
5:00 PM	3	177	0	180	288	1	0	289	8	2	0	10	479
5:15 PM	0	199	0	199	297	0	0	297	2	2	0	4	500
5:30 PM	1	184	0	185	314	3	0	317	0	0	0	0	502
5:45 PM	0	191	0	191	254	1	0	255	0	0	0	0	446
Total	4	751	0	755	1153	5	0	1158	10	4	0	14	1927
Grand Total	39	3111	0	3150	4243	32	0	4275	43	34	0	77	7502
Approach %	1.2	98.8	0.0		99.3	0.7	0.0		55.8	44.2	0.0		
Total %	0.5	41.5	0.0	42.0	56.6	0.4	0.0	57.0	0.6	0.5	0.0	1.0	
Exiting Leg Total				4277				3154				71	7502
Cars	39	3034	0	3073	4156	32	0	4188	43	34	0	77	7338
% Cars	100.0	97.5	0.0	97.6	97.9	100.0	0.0	98.0	100.0	100.0	0.0	100.0	97.8
Exiting Leg Total				4190				3077				71	7338
Heavy Vehicles	0	77	0	77	87	0	0	87	0	0	0	0	164
% Heavy Vehicles	0.0	2.5	0.0	2.4	2.1	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.2
Exiting Leg Total				87				77				0	164

Peak Hour Analysis from 02:00 PM to 06:00 PM begins at:

	Lowell Road (Route 3A)				Lowell Road (Route 3A)				Atwood Avenue				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
4:45 PM	7	208	0	215	266	2	0	268	9	3	0	12	495
5:00 PM	3	177	0	180	288	1	0	289	8	2	0	10	479
5:15 PM	0	199	0	199	297	0	0	297	2	2	0	4	500
5:30 PM	1	184	0	185	314	3	0	317	0	0	0	0	502
Total Volume	11	768	0	779	1165	6	0	1171	19	7	0	26	1976
% Approach Total	1.4	98.6	0.0		99.5	0.5	0.0		73.1	26.9	0.0		
PHF	0.393	0.923	0.000	0.906	0.928	0.500	0.000	0.924	0.528	0.583	0.000	0.542	0.984
Cars	11	759	0	770	1153	6	0	1159	19	7	0	26	1955
Cars %	100.0	98.8	0.0	98.8	99.0	100.0	0.0	99.0	100.0	100.0	0.0	100.0	98.9
Heavy Vehicles	0	9	0	9	12	0	0	12	0	0	0	0	21
Heavy Vehicles %	0.0	1.2	0.0	1.2	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.1
Cars Enter Leg	11	759	0	770	1153	6	0	1159	19	7	0	26	1955
Heavy Enter Leg	0	9	0	9	12	0	0	12	0	0	0	0	21
Total Entering Leg	11	768	0	779	1165	6	0	1171	19	7	0	26	1976
Cars Exiting Leg				1160				778				17	1955
Heavy Exiting Leg				12				9				0	21
Total Exiting Leg				1172				787				17	1976

PDI File #: **239338 A**
 Location: **N: Lowell Road (Route 3A) S: Lowell Road (Route 3A)**
 Location: **W: Atwood Avenue**
 City, State: **Hudson, NH**
 Client: **TF Moran/ J. Porter**
 Site Code: **18149.00**
 Count Date: **Thursday, May 4, 2023**
 Start Time: **2:00 PM**
 End Time: **6:00 PM**
 Class:



Cars

	Lowell Road (Route 3A)				Lowell Road (Route 3A)				Atwood Avenue				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
2:00 PM	0	195	0	195	215	1	0	216	0	0	0	0	411
2:15 PM	3	206	0	209	250	1	0	251	1	2	0	3	463
2:30 PM	3	201	0	204	228	1	0	229	2	1	0	3	436
2:45 PM	5	171	0	176	216	2	0	218	0	3	0	3	397
Total	11	773	0	784	909	5	0	914	3	6	0	9	1707
3:00 PM	1	184	0	185	273	1	0	274	5	3	0	8	467
3:15 PM	2	214	0	216	246	1	0	247	3	1	0	4	467
3:30 PM	3	183	0	186	272	2	0	274	1	0	0	1	461
3:45 PM	0	188	0	188	242	2	0	244	2	2	0	4	436
Total	6	769	0	775	1033	6	0	1039	11	6	0	17	1831
4:00 PM	4	165	0	169	266	5	0	271	2	6	0	8	448
4:15 PM	2	184	0	186	262	7	0	269	3	5	0	8	463
4:30 PM	5	196	0	201	281	2	0	283	5	4	0	9	493
4:45 PM	7	207	0	214	263	2	0	265	9	3	0	12	491
Total	18	752	0	770	1072	16	0	1088	19	18	0	37	1895
5:00 PM	3	175	0	178	284	1	0	285	8	2	0	10	473
5:15 PM	0	195	0	195	295	0	0	295	2	2	0	4	494
5:30 PM	1	182	0	183	311	3	0	314	0	0	0	0	497
5:45 PM	0	188	0	188	252	1	0	253	0	0	0	0	441
Total	4	740	0	744	1142	5	0	1147	10	4	0	14	1905
Grand Total	39	3034	0	3073	4156	32	0	4188	43	34	0	77	7338
Approach %	1.3	98.7	0.0		99.2	0.8	0.0		55.8	44.2	0.0		
Total %	0.5	41.3	0.0	41.9	56.6	0.4	0.0	57.1	0.6	0.5	0.0	1.0	
Exiting Leg Total				4190				3077				71	7338

Peak Hour Analysis from 02:00 PM to 06:00 PM begins at:

	Lowell Road (Route 3A)				Lowell Road (Route 3A)				Atwood Avenue				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
4:45 PM	7	207	0	214	263	2	0	265	9	3	0	12	491
5:00 PM	3	175	0	178	284	1	0	285	8	2	0	10	473
5:15 PM	0	195	0	195	295	0	0	295	2	2	0	4	494
5:30 PM	1	182	0	183	311	3	0	314	0	0	0	0	497
Total Volume	11	759	0	770	1153	6	0	1159	19	7	0	26	1955
% Approach Total	1.4	98.6	0.0		99.5	0.5	0.0		73.1	26.9	0.0		
PHF	0.393	0.917	0.000	0.900	0.927	0.500	0.000	0.923	0.528	0.583	0.000	0.542	0.983
Entering Leg	11	759	0	770	1153	6	0	1159	19	7	0	26	1955
Exiting Leg				1160				778				17	1955
Total				1930				1937				43	3910

PDI File #: **239338 A**
 Location: **N: Lowell Road (Route 3A) S: Lowell Road (Route 3A)**
 Location: **W: Atwood Avenue**
 City, State: **Hudson, NH**
 Client: **TF Moran/ J. Porter**
 Site Code: **18149.00**
 Count Date: **Thursday, May 4, 2023**
 Start Time: **2:00 PM**
 End Time: **6:00 PM**



PRECISION
D A T A
INDUSTRIES, LLC

157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Class:

Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)

	Lowell Road (Route 3A)				Lowell Road (Route 3A)				Atwood Avenue				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
2:00 PM	0	8	0	8	9	0	0	9	0	0	0	0	17
2:15 PM	0	6	0	6	4	0	0	4	0	0	0	0	10
2:30 PM	0	11	0	11	7	0	0	7	0	0	0	0	18
2:45 PM	0	9	0	9	10	0	0	10	0	0	0	0	19
Total	0	34	0	34	30	0	0	30	0	0	0	0	64
3:00 PM	0	9	0	9	12	0	0	12	0	0	0	0	21
3:15 PM	0	7	0	7	10	0	0	10	0	0	0	0	17
3:30 PM	0	3	0	3	3	0	0	3	0	0	0	0	6
3:45 PM	0	1	0	1	6	0	0	6	0	0	0	0	7
Total	0	20	0	20	31	0	0	31	0	0	0	0	51
4:00 PM	0	2	0	2	6	0	0	6	0	0	0	0	8
4:15 PM	0	2	0	2	5	0	0	5	0	0	0	0	7
4:30 PM	0	7	0	7	1	0	0	1	0	0	0	0	8
4:45 PM	0	1	0	1	3	0	0	3	0	0	0	0	4
Total	0	12	0	12	15	0	0	15	0	0	0	0	27
5:00 PM	0	2	0	2	4	0	0	4	0	0	0	0	6
5:15 PM	0	4	0	4	2	0	0	2	0	0	0	0	6
5:30 PM	0	2	0	2	3	0	0	3	0	0	0	0	5
5:45 PM	0	3	0	3	2	0	0	2	0	0	0	0	5
Total	0	11	0	11	11	0	0	11	0	0	0	0	22
Grand Total	0	77	0	77	87	0	0	87	0	0	0	0	164
Approach %	0.0	100.0	0.0		100.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total %	0.0	47.0	0.0	47.0	53.0	0.0	0.0	53.0	0.0	0.0	0.0	0.0	
Exiting Leg Total				87				77					164
Buses	0	20	0	20	23	0	0	23	0	0	0	0	43
% Buses	0.0	26.0	0.0	26.0	26.4	0.0	0.0	26.4	0.0	0.0	0.0	0.0	26.2
Exiting Leg Total				23				20					43
Single-Unit Trucks	0	45	0	45	53	0	0	53	0	0	0	0	98
% Single-Unit	0.0	58.4	0.0	58.4	60.9	0.0	0.0	60.9	0.0	0.0	0.0	0.0	59.8
Exiting Leg Total				53				45					98
Articulated Trucks	0	12	0	12	11	0	0	11	0	0	0	0	23
% Articulated	0.0	15.6	0.0	15.6	12.6	0.0	0.0	12.6	0.0	0.0	0.0	0.0	14.0
Exiting Leg Total				11				12					23

Peak Hour Analysis from 02:00 PM to 06:00 PM begins at:

2:30 PM	Lowell Road (Route 3A)				Lowell Road (Route 3A)				Atwood Avenue				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
2:30 PM	0	11	0	11	7	0	0	7	0	0	0	0	18
2:45 PM	0	9	0	9	10	0	0	10	0	0	0	0	19
3:00 PM	0	9	0	9	12	0	0	12	0	0	0	0	21
3:15 PM	0	7	0	7	10	0	0	10	0	0	0	0	17
Total Volume	0	36	0	36	39	0	0	39	0	0	0	0	75
% Approach Total	0.0	100.0	0.0		100.0	0.0	0.0		0.0	0.0	0.0	0.0	
PHF	0.000	0.818	0.000	0.818	0.813	0.000	0.000	0.813	0.000	0.000	0.000	0.000	0.893
Buses	0	11	0	11	19	0	0	19	0	0	0	0	30
Buses %	0.0	30.6	0.0	30.6	48.7	0.0	0.0	48.7	0.0	0.0	0.0	0.0	40.0
Single-Unit Trucks	0	20	0	20	17	0	0	17	0	0	0	0	37
Single-Unit %	0.0	55.6	0.0	55.6	43.6	0.0	0.0	43.6	0.0	0.0	0.0	0.0	49.3
Articulated Trucks	0	5	0	5	3	0	0	3	0	0	0	0	8
Articulated %	0.0	13.9	0.0	13.9	7.7	0.0	0.0	7.7	0.0	0.0	0.0	0.0	10.7
Buses	0	11	0	11	19	0	0	19	0	0	0	0	30
Single-Unit Trucks	0	20	0	20	17	0	0	17	0	0	0	0	37
Articulated Trucks	0	5	0	5	3	0	0	3	0	0	0	0	8
Total Entering Leg	0	36	0	36	39	0	0	39	0	0	0	0	75
Buses				19				11					30

PDI File #: **239338 A**
 Location: **N: Lowell Road (Route 3A) S: Lowell Road (Route 3A)**
 Location: **W: Atwood Avenue**
 City, State: **Hudson, NH**
 Client: **TF Moran/ J. Porter**
 Site Code: **18149.00**
 Count Date: **Thursday, May 4, 2023**
 Start Time: **2:00 PM**
 End Time: **6:00 PM**



**PRECISION
D A T A
INDUSTRIES, LLC**

157 Washington Street, Suite 2
 Hudson, MA 01749
 508-875-0100 datarequests@pdillc.com

Class:

Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)

	Lowell Road (Route 3A)				Lowell Road (Route 3A)				Atwood Avenue				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
Single-Unit Trucks				17				20				0	37
Articulated Trucks				3				5				0	8
Total Exiting Leg				39				36				0	75

PDI File #: **239338 A**
 Location: **N: Lowell Road (Route 3A) S: Lowell Road (Route 3A)**
 Location: **W: Atwood Avenue**
 City, State: **Hudson, NH**
 Client: **TF Moran/ J. Porter**
 Site Code: **18149.00**
 Count Date: **Thursday, May 4, 2023**
 Start Time: **2:00 PM**
 End Time: **6:00 PM**
 Class:



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Buses

	Lowell Road (Route 3A)				Lowell Road (Route 3A)				Atwood Avenue				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
2:00 PM	0	0	0	0	1	0	0	1	0	0	0	0	1
2:15 PM	0	6	0	6	0	0	0	0	0	0	0	0	6
2:30 PM	0	5	0	5	1	0	0	1	0	0	0	0	6
2:45 PM	0	1	0	1	3	0	0	3	0	0	0	0	4
Total	0	12	0	12	5	0	0	5	0	0	0	0	17
3:00 PM	0	1	0	1	11	0	0	11	0	0	0	0	12
3:15 PM	0	4	0	4	4	0	0	4	0	0	0	0	8
3:30 PM	0	2	0	2	0	0	0	0	0	0	0	0	2
3:45 PM	0	0	0	0	1	0	0	1	0	0	0	0	1
Total	0	7	0	7	16	0	0	16	0	0	0	0	23
4:00 PM	0	1	0	1	0	0	0	0	0	0	0	0	1
4:15 PM	0	0	0	0	1	0	0	1	0	0	0	0	1
4:30 PM	0	0	0	0	1	0	0	1	0	0	0	0	1
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	1	2	0	0	2	0	0	0	0	3
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	20	0	20	23	0	0	23	0	0	0	0	43
Approach %	0.0	100.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total %	0.0	46.5	0.0	46.5	53.5	0.0	0.0	53.5	0.0	0.0	0.0	0.0	0.0
Exiting Leg Total				23				20					43

Peak Hour Analysis from 02:00 PM to 06:00 PM begins at:

	Lowell Road (Route 3A)				Lowell Road (Route 3A)				Atwood Avenue				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
2:30 PM	0	5	0	5	1	0	0	1	0	0	0	0	6
2:45 PM	0	1	0	1	3	0	0	3	0	0	0	0	4
3:00 PM	0	1	0	1	11	0	0	11	0	0	0	0	12
3:15 PM	0	4	0	4	4	0	0	4	0	0	0	0	8
Total Volume	0	11	0	11	19	0	0	19	0	0	0	0	30
% Approach Total	0.0	100.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PHF	0.000	0.550	0.000	0.550	0.432	0.000	0.000	0.432	0.000	0.000	0.000	0.000	0.625
Entering Leg	0	11	0	11	19	0	0	19	0	0	0	0	30
Exiting Leg				19				11				0	30
Total				30				30				0	60

PDI File #: **239338 A**
 Location: **N: Lowell Road (Route 3A) S: Lowell Road (Route 3A)**
 Location: **W: Atwood Avenue**
 City, State: **Hudson, NH**
 Client: **TF Moran/ J. Porter**
 Site Code: **18149.00**
 Count Date: **Thursday, May 4, 2023**
 Start Time: **2:00 PM**
 End Time: **6:00 PM**
 Class:



PRECISION
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157 Washington Street, Suite 2
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 508-875-0100 datarequests@pdillc.com

Single-Unit Trucks

	Lowell Road (Route 3A)				Lowell Road (Route 3A)				Atwood Avenue				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
2:00 PM	0	6	0	6	7	0	0	7	0	0	0	0	13
2:15 PM	0	0	0	0	4	0	0	4	0	0	0	0	4
2:30 PM	0	5	0	5	6	0	0	6	0	0	0	0	11
2:45 PM	0	6	0	6	6	0	0	6	0	0	0	0	12
Total	0	17	0	17	23	0	0	23	0	0	0	0	40
3:00 PM	0	6	0	6	0	0	0	0	0	0	0	0	6
3:15 PM	0	3	0	3	5	0	0	5	0	0	0	0	8
3:30 PM	0	1	0	1	2	0	0	2	0	0	0	0	3
3:45 PM	0	0	0	0	3	0	0	3	0	0	0	0	3
Total	0	10	0	10	10	0	0	10	0	0	0	0	20
4:00 PM	0	1	0	1	6	0	0	6	0	0	0	0	7
4:15 PM	0	2	0	2	2	0	0	2	0	0	0	0	4
4:30 PM	0	6	0	6	0	0	0	0	0	0	0	0	6
4:45 PM	0	1	0	1	3	0	0	3	0	0	0	0	4
Total	0	10	0	10	11	0	0	11	0	0	0	0	21
5:00 PM	0	0	0	0	3	0	0	3	0	0	0	0	3
5:15 PM	0	4	0	4	2	0	0	2	0	0	0	0	6
5:30 PM	0	2	0	2	2	0	0	2	0	0	0	0	4
5:45 PM	0	2	0	2	2	0	0	2	0	0	0	0	4
Total	0	8	0	8	9	0	0	9	0	0	0	0	17
Grand Total	0	45	0	45	53	0	0	53	0	0	0	0	98
Approach %	0.0	100.0	0.0		100.0	0.0	0.0		0.0	0.0	0.0		
Total %	0.0	45.9	0.0	45.9	54.1	0.0	0.0	54.1	0.0	0.0	0.0	0.0	
Exiting Leg Total				53				45					98

Peak Hour Analysis from 02:00 PM to 06:00 PM begins at:

	Lowell Road (Route 3A)				Lowell Road (Route 3A)				Atwood Avenue				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
2:00 PM	0	6	0	6	7	0	0	7	0	0	0	0	13
2:15 PM	0	0	0	0	4	0	0	4	0	0	0	0	4
2:30 PM	0	5	0	5	6	0	0	6	0	0	0	0	11
2:45 PM	0	6	0	6	6	0	0	6	0	0	0	0	12
Total Volume	0	17	0	17	23	0	0	23	0	0	0	0	40
% Approach Total	0.0	100.0	0.0		100.0	0.0	0.0		0.0	0.0	0.0		
PHF	0.000	0.708	0.000	0.708	0.821	0.000	0.000	0.821	0.000	0.000	0.000	0.000	0.769
Entering Leg	0	17	0	17	23	0	0	23	0	0	0	0	40
Exiting Leg				23				17					40
Total				40				40					80

PDI File #: **239338 A**
 Location: **N: Lowell Road (Route 3A) S: Lowell Road (Route 3A)**
 Location: **W: Atwood Avenue**
 City, State: **Hudson, NH**
 Client: **TF Moran/ J. Porter**
 Site Code: **18149.00**
 Count Date: **Thursday, May 4, 2023**
 Start Time: **2:00 PM**
 End Time: **6:00 PM**
 Class:



PRECISION
D A T A
INDUSTRIES, LLC

157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Articulated Trucks

	Lowell Road (Route 3A)				Lowell Road (Route 3A)				Atwood Avenue				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
2:00 PM	0	2	0	2	1	0	0	1	0	0	0	0	3
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 PM	0	1	0	1	0	0	0	0	0	0	0	0	1
2:45 PM	0	2	0	2	1	0	0	1	0	0	0	0	3
Total	0	5	0	5	2	0	0	2	0	0	0	0	7
3:00 PM	0	2	0	2	1	0	0	1	0	0	0	0	3
3:15 PM	0	0	0	0	1	0	0	1	0	0	0	0	1
3:30 PM	0	0	0	0	1	0	0	1	0	0	0	0	1
3:45 PM	0	1	0	1	2	0	0	2	0	0	0	0	3
Total	0	3	0	3	5	0	0	5	0	0	0	0	8
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	2	0	0	2	0	0	0	0	2
4:30 PM	0	1	0	1	0	0	0	0	0	0	0	0	1
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	1	2	0	0	2	0	0	0	0	3
5:00 PM	0	2	0	2	1	0	0	1	0	0	0	0	3
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	1	0	0	1	0	0	0	0	1
5:45 PM	0	1	0	1	0	0	0	0	0	0	0	0	1
Total	0	3	0	3	2	0	0	2	0	0	0	0	5
Grand Total	0	12	0	12	11	0	0	11	0	0	0	0	23
Approach %	0.0	100.0	0.0		100.0	0.0	0.0		0.0	0.0	0.0		
Total %	0.0	52.2	0.0	52.2	47.8	0.0	0.0	47.8	0.0	0.0	0.0	0.0	
Exiting Leg Total				11				12					23

Peak Hour Analysis from 02:00 PM to 06:00 PM begins at:

	Lowell Road (Route 3A)				Lowell Road (Route 3A)				Atwood Avenue				Total
	from North				from South				from West				
	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	
2:30 PM	0	1	0	1	0	0	0	0	0	0	0	0	1
2:45 PM	0	2	0	2	1	0	0	1	0	0	0	0	3
3:00 PM	0	2	0	2	1	0	0	1	0	0	0	0	3
3:15 PM	0	0	0	0	1	0	0	1	0	0	0	0	1
Total Volume	0	5	0	5	3	0	0	3	0	0	0	0	8
% Approach Total	0.0	100.0	0.0		100.0	0.0	0.0		0.0	0.0	0.0		
PHF	0.000	0.625	0.000	0.625	0.750	0.000	0.000	0.750	0.000	0.000	0.000	0.000	0.667
Entering Leg	0	5	0	5	3	0	0	3	0	0	0	0	8
Exiting Leg				3				5				0	8
Total				8				8				0	16

PDI File #: **239338 A**
 Location: **N: Lowell Road (Route 3A) S: Lowell Road (Route 3A)**
 Location: **W: Atwood Avenue**
 City, State: **Hudson, NH**
 Client: **TF Moran/ J. Porter**
 Site Code: **18149.00**
 Count Date: **Thursday, May 4, 2023**
 Start Time: **2:00 PM**
 End Time: **6:00 PM**



PRECISION
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INDUSTRIES, LLC

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Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Class:

Bicycles (on Roadway and Crosswalks)

	Lowell Road (Route 3A)						Lowell Road (Route 3A)						Atwood Avenue						Total
	from North						from South						from West						
	Right	Thru	U-Turn	CW-EB	CW-WB	Total	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Left	U-Turn	CW-NB	CW-SB	Total	
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2	2
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
3:45 PM	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	1	0	1	2
Total	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	3	0	3	4
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	1
5:15 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	0	0	1	1	0	0	0	0	1	0	0	0	0	0	0	2
Grand Total	0	1	0	0	0	1	2	0	0	0	0	2	0	0	0	4	1	5	8
Approach %	0.0	100.0	0.0	0.0	0.0		100.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	80.0	20.0		
Total %	0.0	12.5	0.0	0.0	0.0	12.5	25.0	0.0	0.0	0.0	0.0	25.0	0.0	0.0	0.0	50.0	12.5	62.5	
Exiting Leg Total	2						1						5						8

Peak Hour Analysis from 02:00 PM to 06:00 PM begins at:

3:00 PM	Lowell Road (Route 3A)						Lowell Road (Route 3A)						Atwood Avenue						Total
	from North						from South						from West						
	Right	Thru	U-Turn	CW-EB	CW-WB	Total	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Left	U-Turn	CW-NB	CW-SB	Total	
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
3:45 PM	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	1	0	1	2
Total Volume	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	3	0	3	4
% Approach Total	0.0	0.0	0.0	0.0	0.0		100.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	100.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.375	0.000	0.375	0.500
Entering Leg	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	3	0	3	4
Exiting Leg	1						0						3						4
Total	1						1						6						8

PDI File #: **239338 A**
 Location: **N: Lowell Road (Route 3A) S: Lowell Road (Route 3A)**
 Location: **W: Atwood Avenue**
 City, State: **Hudson, NH**
 Client: **TF Moran/ J. Porter**
 Site Code: **18149.00**
 Count Date: **Thursday, May 4, 2023**
 Start Time: **2:00 PM**
 End Time: **6:00 PM**
 Class:



PRECISION
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INDUSTRIES, LLC

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508-875-0100 datarequests@pdillc.com

Pedestrians

	Lowell Road (Route 3A)						Lowell Road (Route 3A)						Atwood Avenue						Total	
	from North						from South						from West							
	Right	Thru	U-Turn	CW-EB	CW-WB	Total	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Left	U-Turn	CW-NB	CW-SB	Total		
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2	2	
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2	
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2	
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	4	4	
Approach %	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25	75			
Total %	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25	75	100		
Exiting Leg Total	0						0						0						4	4

Peak Hour Analysis from 02:00 PM to 06:00 PM begins at:

2:30 PM	Lowell Road (Route 3A)						Lowell Road (Route 3A)						Atwood Avenue						Total	
	from North						from South						from West							
	Right	Thru	U-Turn	CW-EB	CW-WB	Total	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Left	U-Turn	CW-NB	CW-SB	Total		
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2	2	
% Approach Total	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	50.0	50.0			
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.250	0.500	0.500	
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2	2	
Exiting Leg	0						0						0						2	2
Total	0						0						0						4	4

PDI File #: **239338 B**
 Location: **N: Lowell Road (Route 3 A S: Lowell Road (Route 3A)**
 Location: **E: County Road (South)**
 City, State: **Hudson, NH**
 Client: **TF Moran/ J. Porter**
 Site Code: **18149.00**
 Count Date: **Thursday, May 4, 2023**
 Start Time: **7:00 AM**
 End Time: **9:00 AM**



PRECISION
 D A T A
 INDUSTRIES, LLC
 157 Washington Street, Suite 2
 Hudson, MA 01749
 508-875-0100 datarequests@pdillc.com
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Cars and Heavy Vehicles (Combined)

	Lowell Road (Route 3 A)				County Road (South)				Lowell Road (Route 3A)				Total
	from North				from East				from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
7:00 AM	188	0	0	188	1	32	0	33	16	127	0	143	364
7:15 AM	215	2	0	217	2	18	0	20	21	119	0	140	377
7:30 AM	230	4	0	234	3	23	0	26	26	136	0	162	422
7:45 AM	258	2	0	260	1	26	0	27	24	124	0	148	435
Total	891	8	0	899	7	99	0	106	87	506	0	593	1598
8:00 AM	198	5	0	203	2	27	0	29	25	120	0	145	377
8:15 AM	181	0	0	181	1	21	0	22	25	96	0	121	324
8:30 AM	192	3	0	195	1	28	0	29	20	173	0	193	417
8:45 AM	212	0	0	212	0	15	0	15	26	137	0	163	390
Total	783	8	0	791	4	91	0	95	96	526	0	622	1508
Grand Total	1674	16	0	1690	11	190	0	201	183	1032	0	1215	3106
Approach %	99.1	0.9	0.0		5.5	94.5	0.0		15.1	84.9	0.0		
Total %	53.9	0.5	0.0	54.4	0.4	6.1	0.0	6.5	5.9	33.2	0.0	39.1	
Exiting Leg Total				1043				199				1864	3106
Cars	1595	14	0	1609	11	184	0	195	177	956	0	1133	2937
% Cars	95.3	87.5	0.0	95.2	100.0	96.8	0.0	97.0	96.7	92.6	0.0	93.3	94.6
Exiting Leg Total				967				191				1779	2937
Heavy Vehicles	79	2	0	81	0	6	0	6	6	76	0	82	169
% Heavy Vehicles	4.7	12.5	0.0	4.8	0.0	3.2	0.0	3.0	3.3	7.4	0.0	6.7	5.4
Exiting Leg Total				76				8				85	169

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

	Lowell Road (Route 3 A)				County Road (South)				Lowell Road (Route 3A)				Total
	from North				from East				from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
7:15 AM	215	2	0	217	2	18	0	20	21	119	0	140	377
7:30 AM	230	4	0	234	3	23	0	26	26	136	0	162	422
7:45 AM	258	2	0	260	1	26	0	27	24	124	0	148	435
8:00 AM	198	5	0	203	2	27	0	29	25	120	0	145	377
Total Volume	901	13	0	914	8	94	0	102	96	499	0	595	1611
% Approach Total	98.6	1.4	0.0		7.8	92.2	0.0		16.1	83.9	0.0		
PHF	0.873	0.650	0.000	0.879	0.667	0.870	0.000	0.879	0.923	0.917	0.000	0.918	0.926
Cars	866	11	0	877	8	93	0	101	94	474	0	568	1546
Cars %	96.1	84.6	0.0	96.0	100.0	98.9	0.0	99.0	97.9	95.0	0.0	95.5	96.0
Heavy Vehicles	35	2	0	37	0	1	0	1	2	25	0	27	65
Heavy Vehicles %	3.9	15.4	0.0	4.0	0.0	1.1	0.0	1.0	2.1	5.0	0.0	4.5	4.0
Cars Enter Leg	866	11	0	877	8	93	0	101	94	474	0	568	1546
Heavy Enter Leg	35	2	0	37	0	1	0	1	2	25	0	27	65
Total Entering Leg	901	13	0	914	8	94	0	102	96	499	0	595	1611
Cars Exiting Leg				482				105				959	1546
Heavy Exiting Leg				25				4				36	65
Total Exiting Leg				507				109				995	1611

PDI File #: **239338 B**
 Location: **N: Lowell Road (Route 3 A S: Lowell Road (Route 3A)**
 Location: **E: County Road (South)**
 City, State: **Hudson, NH**
 Client: **TF Moran/ J. Porter**
 Site Code: **18149.00**
 Count Date: **Thursday, May 4, 2023**
 Start Time: **7:00 AM**
 End Time: **9:00 AM**



PRECISION
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 INDUSTRIES, LLC

157 Washington Street, Suite 2
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Class:

Cars

	Lowell Road (Route 3 A)				County Road (South)				Lowell Road (Route 3A)				Total
	from North				from East				from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
7:00 AM	178	0	0	178	1	30	0	31	16	121	0	137	346
7:15 AM	209	2	0	211	2	18	0	20	20	112	0	132	363
7:30 AM	219	4	0	223	3	23	0	26	26	132	0	158	407
7:45 AM	249	1	0	250	1	25	0	26	23	119	0	142	418
Total	855	7	0	862	7	96	0	103	85	484	0	569	1534
8:00 AM	189	4	0	193	2	27	0	29	25	111	0	136	358
8:15 AM	171	0	0	171	1	19	0	20	23	81	0	104	295
8:30 AM	179	3	0	182	1	27	0	28	18	151	0	169	379
8:45 AM	201	0	0	201	0	15	0	15	26	129	0	155	371
Total	740	7	0	747	4	88	0	92	92	472	0	564	1403
Grand Total	1595	14	0	1609	11	184	0	195	177	956	0	1133	2937
Approach %	99.1	0.9	0.0		5.6	94.4	0.0		15.6	84.4	0.0		
Total %	54.3	0.5	0.0	54.8	0.4	6.3	0.0	6.6	6.0	32.6	0.0	38.6	
Exiting Leg Total				967				191				1779	2937

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

	Lowell Road (Route 3 A)				County Road (South)				Lowell Road (Route 3A)				Total
	from North				from East				from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
7:15 AM	209	2	0	211	2	18	0	20	20	112	0	132	363
7:30 AM	219	4	0	223	3	23	0	26	26	132	0	158	407
7:45 AM	249	1	0	250	1	25	0	26	23	119	0	142	418
8:00 AM	189	4	0	193	2	27	0	29	25	111	0	136	358
Total Volume	866	11	0	877	8	93	0	101	94	474	0	568	1546
% Approach Total	98.7	1.3	0.0		7.9	92.1	0.0		16.5	83.5	0.0		
PHF	0.869	0.688	0.000	0.877	0.667	0.861	0.000	0.871	0.904	0.898	0.000	0.899	0.925
Entering Leg	866	11	0	877	8	93	0	101	94	474	0	568	1546
Exiting Leg				482				105				959	1546
Total				1359				206				1527	3092

PDI File #: **239338 B**
 Location: **N: Lowell Road (Route 3 A S: Lowell Road (Route 3A)**
 Location: **E: County Road (South)**
 City, State: **Hudson, NH**
 Client: **TF Moran/ J. Porter**
 Site Code: **18149.00**
 Count Date: **Thursday, May 4, 2023**
 Start Time: **7:00 AM**
 End Time: **9:00 AM**



PRECISION
 D A T A
 INDUSTRIES, LLC
 157 Washington Street, Suite 2
 Hudson, MA 01749
 508-875-0100 datarequests@pdillc.com

Class: **Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)**

	Lowell Road (Route 3 A)				County Road (South)				Lowell Road (Route 3A)				Total
	from North				from East				from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
7:00 AM	10	0	0	10	0	2	0	2	0	6	0	6	18
7:15 AM	6	0	0	6	0	0	0	0	1	7	0	8	14
7:30 AM	11	0	0	11	0	0	0	0	0	4	0	4	15
7:45 AM	9	1	0	10	0	1	0	1	1	5	0	6	17
Total	36	1	0	37	0	3	0	3	2	22	0	24	64
8:00 AM	9	1	0	10	0	0	0	0	0	9	0	9	19
8:15 AM	10	0	0	10	0	2	0	2	2	15	0	17	29
8:30 AM	13	0	0	13	0	1	0	1	2	22	0	24	38
8:45 AM	11	0	0	11	0	0	0	0	0	8	0	8	19
Total	43	1	0	44	0	3	0	3	4	54	0	58	105
Grand Total	79	2	0	81	0	6	0	6	6	76	0	82	169
Approach %	97.5	2.5	0.0		0.0	100.0	0.0		7.3	92.7	0.0		
Total %	46.7	1.2	0.0	47.9	0.0	3.6	0.0	3.6	3.6	45.0	0.0	48.5	
Exiting Leg Total				76				8				85	169
Buses	12	0	0	12	0	0	0	0	3	21	0	24	36
% Buses	15.2	0.0	0.0	14.8	0.0	0.0	0.0	0.0	50.0	27.6	0.0	29.3	21.3
Exiting Leg Total				21				3				12	36
Single-Unit Trucks	54	2	0	56	0	5	0	5	3	46	0	49	110
% Single-Unit	68.4	100.0	0.0	69.1	0.0	83.3	0.0	83.3	50.0	60.5	0.0	59.8	65.1
Exiting Leg Total				46				5				59	110
Articulated Trucks	13	0	0	13	0	1	0	1	0	9	0	9	23
% Articulated	16.5	0.0	0.0	16.0	0.0	16.7	0.0	16.7	0.0	11.8	0.0	11.0	13.6
Exiting Leg Total				9				0				14	23

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

	Lowell Road (Route 3 A)				County Road (South)				Lowell Road (Route 3A)				Total
	from North				from East				from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
8:00 AM	9	1	0	10	0	0	0	0	0	9	0	9	19
8:15 AM	10	0	0	10	0	2	0	2	2	15	0	17	29
8:30 AM	13	0	0	13	0	1	0	1	2	22	0	24	38
8:45 AM	11	0	0	11	0	0	0	0	0	8	0	8	19
Total Volume	43	1	0	44	0	3	0	3	4	54	0	58	105
% Approach Total	97.7	2.3	0.0		0.0	100.0	0.0		6.9	93.1	0.0		
PHF	0.827	0.250	0.000	0.846	0.000	0.375	0.000	0.375	0.500	0.614	0.000	0.604	0.691
Buses	8	0	0	8	0	0	0	0	3	17	0	20	28
Buses %	18.6	0.0	0.0	18.2	0.0	0.0	0.0	0.0	75.0	31.5	0.0	34.5	26.7
Single-Unit Trucks	25	1	0	26	0	3	0	3	1	32	0	33	62
Single-Unit %	58.1	100.0	0.0	59.1	0.0	100.0	0.0	100.0	25.0	59.3	0.0	56.9	59.0
Articulated Trucks	10	0	0	10	0	0	0	0	0	5	0	5	15
Articulated %	23.3	0.0	0.0	22.7	0.0	0.0	0.0	0.0	0.0	9.3	0.0	8.6	14.3
Buses	8	0	0	8	0	0	0	0	3	17	0	20	28
Single-Unit Trucks	25	1	0	26	0	3	0	3	1	32	0	33	62
Articulated Trucks	10	0	0	10	0	0	0	0	0	5	0	5	15
Total Entering Leg	43	1	0	44	0	3	0	3	4	54	0	58	105
Buses				17				3				8	28
Single-Unit Trucks				32				2				28	62
Articulated Trucks				5				0				10	15
Total Exiting Leg				54				5				46	105

PDI File #: **239338 B**
 Location: **N: Lowell Road (Route 3 A S: Lowell Road (Route 3A)**
 Location: **E: County Road (South)**
 City, State: **Hudson, NH**
 Client: **TF Moran/ J. Porter**
 Site Code: **18149.00**
 Count Date: **Thursday, May 4, 2023**
 Start Time: **7:00 AM**
 End Time: **9:00 AM**
 Class:



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 INDUSTRIES, LLC

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Buses

	Lowell Road (Route 3 A)				County Road (South)				Lowell Road (Route 3A)				Total
	from North				from East				from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	3	0	3	3
7:30 AM	1	0	0	1	0	0	0	0	0	1	0	1	2
7:45 AM	3	0	0	3	0	0	0	0	0	0	0	0	3
Total	4	0	0	4	0	0	0	0	0	4	0	4	8
8:00 AM	1	0	0	1	0	0	0	0	0	1	0	1	2
8:15 AM	4	0	0	4	0	0	0	0	1	6	0	7	11
8:30 AM	3	0	0	3	0	0	0	0	2	7	0	9	12
8:45 AM	0	0	0	0	0	0	0	0	0	3	0	3	3
Total	8	0	0	8	0	0	0	0	3	17	0	20	28
Grand Total	12	0	0	12	0	0	0	0	3	21	0	24	36
Approach %	100.0	0.0	0.0		0.0	0.0	0.0		12.5	87.5	0.0		
Total %	33.3	0.0	0.0	33.3	0.0	0.0	0.0	0.0	8.3	58.3	0.0	66.7	
Exiting Leg Total				21				3				12	36

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:45 AM	Lowell Road (Route 3 A)				County Road (South)				Lowell Road (Route 3A)				Total
	from North				from East				from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
7:45 AM	3	0	0	3	0	0	0	0	0	0	0	0	3
8:00 AM	1	0	0	1	0	0	0	0	0	1	0	1	2
8:15 AM	4	0	0	4	0	0	0	0	1	6	0	7	11
8:30 AM	3	0	0	3	0	0	0	0	2	7	0	9	12
Total Volume	11	0	0	11	0	0	0	0	3	14	0	17	28
% Approach Total	100.0	0.0	0.0		0.0	0.0	0.0		17.6	82.4	0.0		
PHF	0.688	0.000	0.000	0.688	0.000	0.000	0.000	0.000	0.375	0.500	0.000	0.472	0.583
Entering Leg	11	0	0	11	0	0	0	0	3	14	0	17	28
Exiting Leg				14				3				11	28
Total				25				3				28	56

PDI File #: **239338 B**
 Location: **N: Lowell Road (Route 3 A S: Lowell Road (Route 3A)**
 Location: **E: County Road (South)**
 City, State: **Hudson, NH**
 Client: **TF Moran/ J. Porter**
 Site Code: **18149.00**
 Count Date: **Thursday, May 4, 2023**
 Start Time: **7:00 AM**
 End Time: **9:00 AM**
 Class:



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Single-Unit Trucks

	Lowell Road (Route 3 A)				County Road (South)				Lowell Road (Route 3A)				Total
	from North				from East				from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
7:00 AM	9	0	0	9	0	1	0	1	0	3	0	3	13
7:15 AM	5	0	0	5	0	0	0	0	1	4	0	5	10
7:30 AM	10	0	0	10	0	0	0	0	0	3	0	3	13
7:45 AM	5	1	0	6	0	1	0	1	1	4	0	5	12
Total	29	1	0	30	0	2	0	2	2	14	0	16	48
8:00 AM	6	1	0	7	0	0	0	0	0	6	0	6	13
8:15 AM	5	0	0	5	0	2	0	2	1	7	0	8	15
8:30 AM	8	0	0	8	0	1	0	1	0	15	0	15	24
8:45 AM	6	0	0	6	0	0	0	0	0	4	0	4	10
Total	25	1	0	26	0	3	0	3	1	32	0	33	62
Grand Total	54	2	0	56	0	5	0	5	3	46	0	49	110
Approach %	96.4	3.6	0.0		0.0	100.0	0.0		6.1	93.9	0.0		
Total %	49.1	1.8	0.0	50.9	0.0	4.5	0.0	4.5	2.7	41.8	0.0	44.5	
Exiting Leg Total				46				5				59	110

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:45 AM	Lowell Road (Route 3 A)				County Road (South)				Lowell Road (Route 3A)				Total
	from North				from East				from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
7:45 AM	5	1	0	6	0	1	0	1	1	4	0	5	12
8:00 AM	6	1	0	7	0	0	0	0	0	6	0	6	13
8:15 AM	5	0	0	5	0	2	0	2	1	7	0	8	15
8:30 AM	8	0	0	8	0	1	0	1	0	15	0	15	24
Total Volume	24	2	0	26	0	4	0	4	2	32	0	34	64
% Approach Total	92.3	7.7	0.0		0.0	100.0	0.0		5.9	94.1	0.0		
PHF	0.750	0.500	0.000	0.813	0.000	0.500	0.000	0.500	0.500	0.533	0.000	0.567	0.667
Entering Leg	24	2	0	26	0	4	0	4	2	32	0	34	64
Exiting Leg				32				4				28	64
Total				58				8				62	128

PDI File #: **239338 B**
 Location: **N: Lowell Road (Route 3 A S: Lowell Road (Route 3A)**
 Location: **E: County Road (South)**
 City, State: **Hudson, NH**
 Client: **TF Moran/ J. Porter**
 Site Code: **18149.00**
 Count Date: **Thursday, May 4, 2023**
 Start Time: **7:00 AM**
 End Time: **9:00 AM**
 Class:



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 INDUSTRIES, LLC

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Articulated Trucks

	Lowell Road (Route 3 A)				County Road (South)				Lowell Road (Route 3A)				Total
	from North				from East				from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
7:00 AM	1	0	0	1	0	1	0	1	0	3	0	3	5
7:15 AM	1	0	0	1	0	0	0	0	0	0	0	0	1
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	1	0	0	1	0	0	0	0	0	1	0	1	2
Total	3	0	0	3	0	1	0	1	0	4	0	4	8
8:00 AM	2	0	0	2	0	0	0	0	0	2	0	2	4
8:15 AM	1	0	0	1	0	0	0	0	0	2	0	2	3
8:30 AM	2	0	0	2	0	0	0	0	0	0	0	0	2
8:45 AM	5	0	0	5	0	0	0	0	0	1	0	1	6
Total	10	0	0	10	0	0	0	0	0	5	0	5	15
Grand Total	13	0	0	13	0	1	0	1	0	9	0	9	23
Approach %	100.0	0.0	0.0		0.0	100.0	0.0		0.0	100.0	0.0		
Total %	56.5	0.0	0.0	56.5	0.0	4.3	0.0	4.3	0.0	39.1	0.0	39.1	
Exiting Leg Total				9				0				14	23

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

8:00 AM	Lowell Road (Route 3 A)				County Road (South)				Lowell Road (Route 3A)				Total
	from North				from East				from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
8:00 AM	2	0	0	2	0	0	0	0	0	2	0	2	4
8:15 AM	1	0	0	1	0	0	0	0	0	2	0	2	3
8:30 AM	2	0	0	2	0	0	0	0	0	0	0	0	2
8:45 AM	5	0	0	5	0	0	0	0	0	1	0	1	6
Total Volume	10	0	0	10	0	0	0	0	0	5	0	5	15
% Approach Total	100.0	0.0	0.0		0.0	0.0	0.0		0.0	100.0	0.0		
PHF	0.500	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.625	0.000	0.625	0.625
Entering Leg	10	0	0	10	0	0	0	0	0	5	0	5	15
Exiting Leg				5				0				10	15
Total				15				0				15	30

PDI File #: **239338 B**
 Location: **N: Lowell Road (Route 3 A S: Lowell Road (Route 3A)**
 Location: **E: County Road (South)**
 City, State: **Hudson, NH**
 Client: **TF Moran/ J. Porter**
 Site Code: **18149.00**
 Count Date: **Thursday, May 4, 2023**
 Start Time: **7:00 AM**
 End Time: **9:00 AM**



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Bicycles (on Roadway and Crosswalks)

	Lowell Road (Route 3 A)						County Road (South)						Lowell Road (Route 3A)						Total
	from North						from East						from South						
	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	U-Turn	CW-WB	CW-EB	Total	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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 %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Exiting Leg Total	0						0						0						0

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:00 AM	Lowell Road (Route 3 A)						County Road (South)						Lowell Road (Route 3A)						Total
	from North						from East						from South						
	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	U-Turn	CW-WB	CW-EB	Total	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Approach Total	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exiting Leg	0						0						0						0
Total	0						0						0						0

PDI File #: **239338 B**
 Location: **N: Lowell Road (Route 3 A S: Lowell Road (Route 3A)**
 Location: **E: County Road (South)**
 City, State: **Hudson, NH**
 Client: **TF Moran/ J. Porter**
 Site Code: **18149.00**
 Count Date: **Thursday, May 4, 2023**
 Start Time: **7:00 AM**
 End Time: **9:00 AM**
 Class:



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Pedestrians

	Lowell Road (Route 3 A)						County Road (South)						Lowell Road (Route 3A)						Total
	from North						from East						from South						
	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	U-Turn	CW-WB	CW-EB	Total	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	2	1	3	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	2	1	3	0	0	0	0	0	0	0
Approach %	0	0	0	0	0	0	0	0	0	66.667	33.333		0	0	0	0	0	0	
Total %	0	0	0	0	0	0	0	0	0	66.667	33.333	100	0	0	0	0	0	0	
Exiting Leg Total	0						3						0						3

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:45 AM	Lowell Road (Route 3 A)						County Road (South)						Lowell Road (Route 3A)						Total
	from North						from East						from South						
	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	U-Turn	CW-WB	CW-EB	Total	
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	2	1	3	0	0	0	0	0	0	0
% Approach Total	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	66.7	33.3		0.0	0.0	0.0	0.0	0.0	0.0	
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.250	0.375	0.000	0.000	0.000	0.000	0.000	0.000	0.375
Entering Leg	0	0	0	0	0	0	0	0	0	2	1	3	0	0	0	0	0	0	0
Exiting Leg	0						3						0						3
Total	0						6						0						6

PDI File #: **239338 B**
 Location: **N: Lowell Road (Route 3 A S: Lowell Road (Route 3A)**
 Location: **E: County Road (South)**
 City, State: **Hudson, NH**
 Client: **TF Moran/ J. Porter**
 Site Code: **18149.00**
 Count Date: **Thursday, May 4, 2023**
 Start Time: **2:00 PM**
 End Time: **6:00 PM**



Cars and Heavy Vehicles (Combined)

	Lowell Road (Route 3 A)				County Road (South)				Lowell Road (Route 3A)				Total
	from North				from East				from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
2:00 PM	190	0	0	190	3	12	0	15	43	181	0	224	429
2:15 PM	202	2	0	204	0	11	0	11	51	206	0	257	472
2:30 PM	199	0	0	199	1	17	0	18	69	167	0	236	453
2:45 PM	169	3	0	172	1	17	0	18	41	187	0	228	418
Total	760	5	0	765	5	57	0	62	204	741	0	945	1772
3:00 PM	178	0	0	178	0	15	0	15	56	233	0	289	482
3:15 PM	207	2	0	209	1	10	0	11	56	201	0	257	477
3:30 PM	174	1	0	175	3	14	0	17	50	226	0	276	468
3:45 PM	174	1	0	175	1	13	0	14	62	190	0	252	441
Total	733	4	0	737	5	52	0	57	224	850	0	1074	1868
4:00 PM	160	2	0	162	0	17	0	17	51	228	0	279	458
4:15 PM	181	3	0	184	6	7	0	13	54	218	0	272	469
4:30 PM	195	2	0	197	2	11	0	13	56	230	0	286	496
4:45 PM	196	2	0	198	2	18	0	20	55	216	0	271	489
Total	732	9	0	741	10	53	0	63	216	892	0	1108	1912
5:00 PM	171	1	0	172	2	9	0	11	56	233	0	289	472
5:15 PM	183	2	0	185	2	17	0	19	61	237	0	298	502
5:30 PM	175	2	0	177	3	12	0	15	59	253	0	312	504
5:45 PM	187	1	0	188	2	5	0	7	40	214	0	254	449
Total	716	6	0	722	9	43	0	52	216	937	0	1153	1927
Grand Total	2941	24	0	2965	29	205	0	234	860	3420	0	4280	7479
Approach %	99.2	0.8	0.0		12.4	87.6	0.0		20.1	79.9	0.0		
Total %	39.3	0.3	0.0	39.6	0.4	2.7	0.0	3.1	11.5	45.7	0.0	57.2	
Exiting Leg Total				3449				884				3146	7479
Cars	2877	24	0	2901	29	202	0	231	854	3335	0	4189	7321
% Cars	97.8	100.0	0.0	97.8	100.0	98.5	0.0	98.7	99.3	97.5	0.0	97.9	97.9
Exiting Leg Total				3364				878				3079	7321
Heavy Vehicles	64	0	0	64	0	3	0	3	6	85	0	91	158
% Heavy Vehicles	2.2	0.0	0.0	2.2	0.0	1.5	0.0	1.3	0.7	2.5	0.0	2.1	2.1
Exiting Leg Total				85				6				67	158

Peak Hour Analysis from 02:00 PM to 06:00 PM begins at:

4:45 PM	Lowell Road (Route 3 A)				County Road (South)				Lowell Road (Route 3A)				Total
	from North				from East				from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
4:45 PM	196	2	0	198	2	18	0	20	55	216	0	271	489
5:00 PM	171	1	0	172	2	9	0	11	56	233	0	289	472
5:15 PM	183	2	0	185	2	17	0	19	61	237	0	298	502
5:30 PM	175	2	0	177	3	12	0	15	59	253	0	312	504
Total Volume	725	7	0	732	9	56	0	65	231	939	0	1170	1967
% Approach Total	99.0	1.0	0.0		13.8	86.2	0.0		19.7	80.3	0.0		
PHF	0.925	0.875	0.000	0.924	0.750	0.778	0.000	0.813	0.947	0.928	0.000	0.938	0.976
Cars	718	7	0	725	9	55	0	64	229	927	0	1156	1945
Cars %	99.0	100.0	0.0	99.0	100.0	98.2	0.0	98.5	99.1	98.7	0.0	98.8	98.9
Heavy Vehicles	7	0	0	7	0	1	0	1	2	12	0	14	22
Heavy Vehicles %	1.0	0.0	0.0	1.0	0.0	1.8	0.0	1.5	0.9	1.3	0.0	1.2	1.1
Cars Enter Leg	718	7	0	725	9	55	0	64	229	927	0	1156	1945
Heavy Enter Leg	7	0	0	7	0	1	0	1	2	12	0	14	22
Total Entering Leg	725	7	0	732	9	56	0	65	231	939	0	1170	1967
Cars Exiting Leg				936				236				773	1945
Heavy Exiting Leg				12				2				8	22
Total Exiting Leg				948				238				781	1967

PDI File #: **239338 B**
 Location: **N: Lowell Road (Route 3 A S: Lowell Road (Route 3A)**
 Location: **E: County Road (South)**
 City, State: **Hudson, NH**
 Client: **TF Moran/ J. Porter**
 Site Code: **18149.00**
 Count Date: **Thursday, May 4, 2023**
 Start Time: **2:00 PM**
 End Time: **6:00 PM**
 Class:



Cars

	Lowell Road (Route 3 A)				County Road (South)				Lowell Road (Route 3A)				Total
	from North				from East				from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
2:00 PM	184	0	0	184	3	12	0	15	43	171	0	214	413
2:15 PM	197	2	0	199	0	11	0	11	50	203	0	253	463
2:30 PM	187	0	0	187	1	16	0	17	68	162	0	230	434
2:45 PM	162	3	0	165	1	17	0	18	41	177	0	218	401
Total	730	5	0	735	5	56	0	61	202	713	0	915	1711
3:00 PM	172	0	0	172	0	15	0	15	56	219	0	275	462
3:15 PM	202	2	0	204	1	10	0	11	55	190	0	245	460
3:30 PM	171	1	0	172	3	14	0	17	50	222	0	272	461
3:45 PM	173	1	0	174	1	13	0	14	61	185	0	246	434
Total	718	4	0	722	5	52	0	57	222	816	0	1038	1817
4:00 PM	158	2	0	160	0	17	0	17	51	223	0	274	451
4:15 PM	179	3	0	182	6	7	0	13	54	215	0	269	464
4:30 PM	190	2	0	192	2	10	0	12	56	229	0	285	489
4:45 PM	196	2	0	198	2	18	0	20	55	212	0	267	485
Total	723	9	0	732	10	52	0	62	216	879	0	1095	1889
5:00 PM	169	1	0	170	2	9	0	11	55	230	0	285	466
5:15 PM	180	2	0	182	2	16	0	18	61	234	0	295	495
5:30 PM	173	2	0	175	3	12	0	15	58	251	0	309	499
5:45 PM	184	1	0	185	2	5	0	7	40	212	0	252	444
Total	706	6	0	712	9	42	0	51	214	927	0	1141	1904
Grand Total	2877	24	0	2901	29	202	0	231	854	3335	0	4189	7321
Approach %	99.2	0.8	0.0		12.6	87.4	0.0		20.4	79.6	0.0		
Total %	39.3	0.3	0.0	39.6	0.4	2.8	0.0	3.2	11.7	45.6	0.0	57.2	
Exiting Leg Total				3364				878				3079	7321

Peak Hour Analysis from 02:00 PM to 06:00 PM begins at:

4:45 PM	Lowell Road (Route 3 A)				County Road (South)				Lowell Road (Route 3A)				Total
	from North				from East				from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
4:45 PM	196	2	0	198	2	18	0	20	55	212	0	267	485
5:00 PM	169	1	0	170	2	9	0	11	55	230	0	285	466
5:15 PM	180	2	0	182	2	16	0	18	61	234	0	295	495
5:30 PM	173	2	0	175	3	12	0	15	58	251	0	309	499
Total Volume	718	7	0	725	9	55	0	64	229	927	0	1156	1945
% Approach Total	99.0	1.0	0.0		14.1	85.9	0.0		19.8	80.2	0.0		
PHF	0.916	0.875	0.000	0.915	0.750	0.764	0.000	0.800	0.939	0.923	0.000	0.935	0.974
Entering Leg	718	7	0	725	9	55	0	64	229	927	0	1156	1945
Exiting Leg				936				236				773	1945
Total				1661				300				1929	3890

PDI File #: **239338 B**
 Location: **N: Lowell Road (Route 3 A S: Lowell Road (Route 3A)**
 Location: **E: County Road (South)**
 City, State: **Hudson, NH**
 Client: **TF Moran/ J. Porter**
 Site Code: **18149.00**
 Count Date: **Thursday, May 4, 2023**
 Start Time: **2:00 PM**
 End Time: **6:00 PM**



Class: Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)

	Lowell Road (Route 3 A)				County Road (South)				Lowell Road (Route 3A)				Total
	from North				from East				from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
2:00 PM	6	0	0	6	0	0	0	0	0	10	0	10	16
2:15 PM	5	0	0	5	0	0	0	0	1	3	0	4	9
2:30 PM	12	0	0	12	0	1	0	1	1	5	0	6	19
2:45 PM	7	0	0	7	0	0	0	0	0	10	0	10	17
Total	30	0	0	30	0	1	0	1	2	28	0	30	61
3:00 PM	6	0	0	6	0	0	0	0	0	14	0	14	20
3:15 PM	5	0	0	5	0	0	0	0	1	11	0	12	17
3:30 PM	3	0	0	3	0	0	0	0	0	4	0	4	7
3:45 PM	1	0	0	1	0	0	0	0	1	5	0	6	7
Total	15	0	0	15	0	0	0	0	2	34	0	36	51
4:00 PM	2	0	0	2	0	0	0	0	0	5	0	5	7
4:15 PM	2	0	0	2	0	0	0	0	0	3	0	3	5
4:30 PM	5	0	0	5	0	1	0	1	0	1	0	1	7
4:45 PM	0	0	0	0	0	0	0	0	0	4	0	4	4
Total	9	0	0	9	0	1	0	1	0	13	0	13	23
5:00 PM	2	0	0	2	0	0	0	0	1	3	0	4	6
5:15 PM	3	0	0	3	0	1	0	1	0	3	0	3	7
5:30 PM	2	0	0	2	0	0	0	0	1	2	0	3	5
5:45 PM	3	0	0	3	0	0	0	0	0	2	0	2	5
Total	10	0	0	10	0	1	0	1	2	10	0	12	23
Grand Total	64	0	0	64	0	3	0	3	6	85	0	91	158
Approach %	100.0	0.0	0.0		0.0	100.0	0.0		6.6	93.4	0.0		
Total %	40.5	0.0	0.0	40.5	0.0	1.9	0.0	1.9	3.8	53.8	0.0	57.6	
Exiting Leg Total				85				6				67	158
Buses	19	0	0	19	0	0	0	0	1	21	0	22	41
% Buses	29.7	0.0	0.0	29.7	0.0	0.0	0.0	0.0	16.7	24.7	0.0	24.2	25.9
Exiting Leg Total				21				1				19	41
Single-Unit Trucks	33	0	0	33	0	3	0	3	5	50	0	55	91
% Single-Unit	51.6	0.0	0.0	51.6	0.0	100.0	0.0	100.0	83.3	58.8	0.0	60.4	57.6
Exiting Leg Total				50				5				36	91
Articulated Trucks	12	0	0	12	0	0	0	0	0	14	0	14	26
% Articulated	18.8	0.0	0.0	18.8	0.0	0.0	0.0	0.0	0.0	16.5	0.0	15.4	16.5
Exiting Leg Total				14				0				12	26

Peak Hour Analysis from 02:00 PM to 06:00 PM begins at:

2:30 PM	Lowell Road (Route 3 A)				County Road (South)				Lowell Road (Route 3A)				Total
	from North				from East				from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
2:30 PM	12	0	0	12	0	1	0	1	1	5	0	6	19
2:45 PM	7	0	0	7	0	0	0	0	0	10	0	10	17
3:00 PM	6	0	0	6	0	0	0	0	0	14	0	14	20
3:15 PM	5	0	0	5	0	0	0	0	1	11	0	12	17
Total Volume	30	0	0	30	0	1	0	1	2	40	0	42	73
% Approach Total	100.0	0.0	0.0		0.0	100.0	0.0		4.8	95.2	0.0		
PHF	0.625	0.000	0.000	0.625	0.000	0.250	0.000	0.250	0.500	0.714	0.000	0.750	0.913
Buses	11	0	0	11	0	0	0	0	0	18	0	18	29
Buses %	36.7	0.0	0.0	36.7	0.0	0.0	0.0	0.0	0.0	45.0	0.0	42.9	39.7
Single-Unit Trucks	13	0	0	13	0	1	0	1	2	17	0	19	33
Single-Unit %	43.3	0.0	0.0	43.3	0.0	100.0	0.0	100.0	100.0	42.5	0.0	45.2	45.2
Articulated Trucks	6	0	0	6	0	0	0	0	0	5	0	5	11
Articulated %	20.0	0.0	0.0	20.0	0.0	0.0	0.0	0.0	0.0	12.5	0.0	11.9	15.1
Buses	11	0	0	11	0	0	0	0	0	18	0	18	29
Single-Unit Trucks	13	0	0	13	0	1	0	1	2	17	0	19	33
Articulated Trucks	6	0	0	6	0	0	0	0	0	5	0	5	11
Total Entering Leg	30	0	0	30	0	1	0	1	2	40	0	42	73
Buses				18				0				11	29

PDI File #: **239338 B**
 Location: **N: Lowell Road (Route 3 A S: Lowell Road (Route 3A)**
 Location: **E: County Road (South)**
 City, State: **Hudson, NH**
 Client: **TF Moran/ J. Porter**
 Site Code: **18149.00**
 Count Date: **Thursday, May 4, 2023**
 Start Time: **2:00 PM**
 End Time: **6:00 PM**



**PRECISION
D A T A
INDUSTRIES, LLC**

157 Washington Street, Suite 2
 Hudson, MA 01749
 508-875-0100 datarequests@pdillc.com

Class: Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)

	Lowell Road (Route 3 A)				County Road (South)				Lowell Road (Route 3A)				Total
	from North				from East				from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
Single-Unit Trucks				17				2				14	33
Articulated Trucks				5				0				6	11
Total Exiting Leg				40				2				31	73

PDI File #: **239338 B**
 Location: **N: Lowell Road (Route 3 A S: Lowell Road (Route 3A)**
 Location: **E: County Road (South)**
 City, State: **Hudson, NH**
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 Class:



PRECISION
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Buses

	Lowell Road (Route 3 A)				County Road (South)				Lowell Road (Route 3A)				Total	
	from North				from East				from South					
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total		
2:00 PM	0	0	0	0	0	0	0	0	0	0	1	0	1	1
2:15 PM	5	0	0	5	0	0	0	0	0	0	0	0	0	5
2:30 PM	5	0	0	5	0	0	0	0	0	0	1	0	1	6
2:45 PM	1	0	0	1	0	0	0	0	0	0	3	0	3	4
Total	11	0	0	11	0	0	0	0	0	0	5	0	5	16
3:00 PM	1	0	0	1	0	0	0	0	0	0	10	0	10	11
3:15 PM	4	0	0	4	0	0	0	0	0	0	4	0	4	8
3:30 PM	2	0	0	2	0	0	0	0	0	0	0	0	0	2
3:45 PM	0	0	0	0	0	0	0	0	0	1	0	0	1	1
Total	7	0	0	7	0	0	0	0	0	1	14	0	15	22
4:00 PM	1	0	0	1	0	0	0	0	0	0	0	0	0	1
4:15 PM	0	0	0	0	0	0	0	0	0	0	1	0	1	1
4:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	1	1
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1	0	0	1	0	0	0	0	0	0	2	0	2	3
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	19	0	0	19	0	0	0	0	0	1	21	0	22	41
Approach %	100.0	0.0	0.0		0.0	0.0	0.0			4.5	95.5	0.0		
Total %	46.3	0.0	0.0	46.3	0.0	0.0	0.0	0.0	0.0	2.4	51.2	0.0	53.7	
Exiting Leg Total				21				1					19	41

Peak Hour Analysis from 02:00 PM to 06:00 PM begins at:

	Lowell Road (Route 3 A)				County Road (South)				Lowell Road (Route 3A)				Total	
	from North				from East				from South					
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total		
2:30 PM	5	0	0	5	0	0	0	0	0	0	1	0	1	6
2:45 PM	1	0	0	1	0	0	0	0	0	0	3	0	3	4
3:00 PM	1	0	0	1	0	0	0	0	0	0	10	0	10	11
3:15 PM	4	0	0	4	0	0	0	0	0	0	4	0	4	8
Total Volume	11	0	0	11	0	0	0	0	0	0	18	0	18	29
% Approach Total	100.0	0.0	0.0		0.0	0.0	0.0			0.0	100.0	0.0		
PHF	0.550	0.000	0.000	0.550	0.000	0.000	0.000	0.000	0.000	0.000	0.450	0.000	0.450	0.659
Entering Leg	11	0	0	11	0	0	0	0	0	0	18	0	18	29
Exiting Leg				18				0					11	29
Total				29				0					29	58

PDI File #: **239338 B**
 Location: **N: Lowell Road (Route 3 A S: Lowell Road (Route 3A)**
 Location: **E: County Road (South)**
 City, State: **Hudson, NH**
 Client: **TF Moran/ J. Porter**
 Site Code: **18149.00**
 Count Date: **Thursday, May 4, 2023**
 Start Time: **2:00 PM**
 End Time: **6:00 PM**
 Class:



PRECISION
 D A T A
 INDUSTRIES, LLC

157 Washington Street, Suite 2
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 508-875-0100 datarequests@pdillc.com

Single-Unit Trucks

	Lowell Road (Route 3 A)				County Road (South)				Lowell Road (Route 3A)				Total	
	from North				from East				from South					
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total		
2:00 PM	5	0	0	5	0	0	0	0	0	0	6	0	6	11
2:15 PM	0	0	0	0	0	0	0	0	0	1	3	0	4	4
2:30 PM	5	0	0	5	0	1	0	1	1	1	2	0	3	9
2:45 PM	5	0	0	5	0	0	0	0	0	0	6	0	6	11
Total	15	0	0	15	0	1	0	1	1	2	17	0	19	35
3:00 PM	3	0	0	3	0	0	0	0	0	0	4	0	4	7
3:15 PM	0	0	0	0	0	0	0	0	0	1	5	0	6	6
3:30 PM	1	0	0	1	0	0	0	0	0	0	3	0	3	4
3:45 PM	0	0	0	0	0	0	0	0	0	0	3	0	3	3
Total	4	0	0	4	0	0	0	0	0	1	15	0	16	20
4:00 PM	1	0	0	1	0	0	0	0	0	0	5	0	5	6
4:15 PM	2	0	0	2	0	0	0	0	0	0	1	0	1	3
4:30 PM	4	0	0	4	0	1	0	1	1	0	0	0	0	5
4:45 PM	0	0	0	0	0	0	0	0	0	0	4	0	4	4
Total	7	0	0	7	0	1	0	1	1	0	10	0	10	18
5:00 PM	0	0	0	0	0	0	0	0	0	1	2	0	3	3
5:15 PM	3	0	0	3	0	1	0	1	1	0	3	0	3	7
5:30 PM	2	0	0	2	0	0	0	0	0	1	1	0	2	4
5:45 PM	2	0	0	2	0	0	0	0	0	0	2	0	2	4
Total	7	0	0	7	0	1	0	1	1	2	8	0	10	18
Grand Total	33	0	0	33	0	3	0	3	3	5	50	0	55	91
Approach %	100.0	0.0	0.0		0.0	100.0	0.0			9.1	90.9	0.0		
Total %	36.3	0.0	0.0	36.3	0.0	3.3	0.0	3.3	3.3	5.5	54.9	0.0	60.4	
Exiting Leg Total				50				5	5				36	91

Peak Hour Analysis from 02:00 PM to 06:00 PM begins at:

	Lowell Road (Route 3 A)				County Road (South)				Lowell Road (Route 3A)				Total	
	from North				from East				from South					
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total		
2:00 PM	5	0	0	5	0	0	0	0	0	0	6	0	6	11
2:15 PM	0	0	0	0	0	0	0	0	0	1	3	0	4	4
2:30 PM	5	0	0	5	0	1	0	1	1	1	2	0	3	9
2:45 PM	5	0	0	5	0	0	0	0	0	0	6	0	6	11
Total Volume	15	0	0	15	0	1	0	1	1	2	17	0	19	35
% Approach Total	100.0	0.0	0.0		0.0	100.0	0.0			10.5	89.5	0.0		
PHF	0.750	0.000	0.000	0.750	0.000	0.250	0.000	0.250	0.250	0.500	0.708	0.000	0.792	0.795
Entering Leg	15	0	0	15	0	1	0	1	1	2	17	0	19	35
Exiting Leg				17				2	2				16	35
Total				32				3	3				35	70

PDI File #: **239338 B**
 Location: **N: Lowell Road (Route 3 A S: Lowell Road (Route 3A)**
 Location: **E: County Road (South)**
 City, State: **Hudson, NH**
 Client: **TF Moran/ J. Porter**
 Site Code: **18149.00**
 Count Date: **Thursday, May 4, 2023**
 Start Time: **2:00 PM**
 End Time: **6:00 PM**
 Class:



PRECISION
D A T A
INDUSTRIES, LLC

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Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Articulated Trucks

	Lowell Road (Route 3 A)				County Road (South)				Lowell Road (Route 3A)				Total
	from North				from East				from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
2:00 PM	1	0	0	1	0	0	0	0	0	3	0	3	4
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 PM	2	0	0	2	0	0	0	0	0	2	0	2	4
2:45 PM	1	0	0	1	0	0	0	0	0	1	0	1	2
Total	4	0	0	4	0	0	0	0	0	6	0	6	10
3:00 PM	2	0	0	2	0	0	0	0	0	0	0	0	2
3:15 PM	1	0	0	1	0	0	0	0	0	2	0	2	3
3:30 PM	0	0	0	0	0	0	0	0	0	1	0	1	1
3:45 PM	1	0	0	1	0	0	0	0	0	2	0	2	3
Total	4	0	0	4	0	0	0	0	0	5	0	5	9
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	1	0	1	1
4:30 PM	1	0	0	1	0	0	0	0	0	0	0	0	1
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1	0	0	1	0	0	0	0	0	1	0	1	2
5:00 PM	2	0	0	2	0	0	0	0	0	1	0	1	3
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	1	0	1	1
5:45 PM	1	0	0	1	0	0	0	0	0	0	0	0	1
Total	3	0	0	3	0	0	0	0	0	2	0	2	5
Grand Total	12	0	0	12	0	0	0	0	0	14	0	14	26
Approach %	100.0	0.0	0.0		0.0	0.0	0.0		0.0	100.0	0.0		
Total %	46.2	0.0	0.0	46.2	0.0	0.0	0.0	0.0	0.0	53.8	0.0	53.8	
Exiting Leg Total				14				0				12	26

Peak Hour Analysis from 02:00 PM to 06:00 PM begins at:

	Lowell Road (Route 3 A)				County Road (South)				Lowell Road (Route 3A)				Total
	from North				from East				from South				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	
2:30 PM	2	0	0	2	0	0	0	0	0	2	0	2	4
2:45 PM	1	0	0	1	0	0	0	0	0	1	0	1	2
3:00 PM	2	0	0	2	0	0	0	0	0	0	0	0	2
3:15 PM	1	0	0	1	0	0	0	0	0	2	0	2	3
Total Volume	6	0	0	6	0	0	0	0	0	5	0	5	11
% Approach Total	100.0	0.0	0.0		0.0	0.0	0.0		0.0	100.0	0.0		
PHF	0.750	0.000	0.000	0.750	0.000	0.000	0.000	0.000	0.000	0.625	0.000	0.625	0.688
Entering Leg	6	0	0	6	0	0	0	0	0	5	0	5	11
Exiting Leg				5				0				6	11
Total				11				0				11	22

PDI File #: **239338 B**
 Location: **N: Lowell Road (Route 3 A S: Lowell Road (Route 3A)**
 Location: **E: County Road (South)**
 City, State: **Hudson, NH**
 Client: **TF Moran/ J. Porter**
 Site Code: **18149.00**
 Count Date: **Thursday, May 4, 2023**
 Start Time: **2:00 PM**
 End Time: **6:00 PM**



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 Hudson, MA 01749
 508-875-0100 datarequests@pdillc.com

Bicycles (on Roadway and Crosswalks)

	Lowell Road (Route 3 A)						County Road (South)						Lowell Road (Route 3A)						Total
	from North						from East						from South						
	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	U-Turn	CW-WB	CW-EB	Total	
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
Approach %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	100.0
Exiting Leg Total	1						0						0						1

Peak Hour Analysis from 02:00 PM to 06:00 PM begins at:

4:15 PM	Lowell Road (Route 3 A)						County Road (South)						Lowell Road (Route 3A)						Total
	from North						from East						from South						
	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	U-Turn	CW-WB	CW-EB	Total	
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
% Approach Total	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.250	0.250
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
Exiting Leg	1						0						0						1
Total	1						0						1						2

PDI File #: **239338 B**
 Location: **N: Lowell Road (Route 3 A S: Lowell Road (Route 3A)**
 Location: **E: County Road (South)**
 City, State: **Hudson, NH**
 Client: **TF Moran/ J. Porter**
 Site Code: **18149.00**
 Count Date: **Thursday, May 4, 2023**
 Start Time: **2:00 PM**
 End Time: **6:00 PM**
 Class:



**PRECISION
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INDUSTRIES, LLC**
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 Hudson, MA 01749
 508-875-0100 datarequests@pdillc.com

Pedestrians

	Lowell Road (Route 3 A)						County Road (South)						Lowell Road (Route 3A)						Total
	from North						from East						from South						
	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	U-Turn	CW-WB	CW-EB	Total	
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1
Total	0	0	0	0	0	0	0	0	0	1	1	2	0	0	0	0	0	0	2
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	1	1	2	0	0	0	0	0	0	2
Approach %	0	0	0	0	0	0	0	0	0	50	50	100	0	0	0	0	0	0	0
Total %	0	0	0	0	0	0	0	0	0	50	50	100	0	0	0	0	0	0	0
Exiting Leg Total	0						2						0						2

Peak Hour Analysis from 02:00 PM to 06:00 PM begins at:

3:00 PM	Lowell Road (Route 3 A)						County Road (South)						Lowell Road (Route 3A)						Total
	from North						from East						from South						
	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	U-Turn	CW-WB	CW-EB	Total	
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1
Total Volume	0	0	0	0	0	0	0	0	0	1	1	2	0	0	0	0	0	0	2
% Approach Total	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	50.0	50.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.250	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.500
Entering Leg	0	0	0	0	0	0	0	0	0	1	1	2	0	0	0	0	0	0	2
Exiting Leg	0						2						0						2
Total	0						4						0						4

PDI File #: **239338 C**
 Location: **N: Lowell Road (Route 3A) S: Lowell Road (Route 3A) NE: Driveway**
 Location: **E: County Road (North)**
 City, State: **Hudson, NH**
 Client: **TF Moran/ J. Porter**
 Site Code: **18149.00**
 Count Date: **Thursday, May 4, 2023**
 Start Time: **7:00 AM**
 End Time: **9:00 AM**
 Class:



Cars and Heavy Vehicles (Combined)

	Lowell Road (Route 3A)					Driveway					County Road (North)					Lowell Road (Route 3A)					Total
	from North					from Northeast					from East					from South					
	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Left	U-Turn	Total	Right	Bear Right	Thru	U-Turn	Total	
7:00 AM	187	1	0	0	188	0	1	0	0	1	0	9	1	0	10	1	0	123	0	124	323
7:15 AM	205	5	0	0	210	0	1	0	0	1	0	6	0	0	6	2	0	123	0	125	342
7:30 AM	214	2	0	0	216	0	2	0	0	2	0	6	1	0	7	1	0	146	0	147	372
7:45 AM	243	7	0	0	250	0	2	0	0	2	0	8	2	0	10	2	0	112	0	114	376
Total	849	15	0	0	864	0	6	0	0	6	0	29	4	0	33	6	0	504	0	510	1413
8:00 AM	198	11	0	0	209	0	0	0	0	0	0	9	1	0	10	1	0	138	0	139	358
8:15 AM	178	6	0	0	184	0	0	0	0	0	0	4	1	0	5	3	0	98	0	101	290
8:30 AM	190	4	0	0	194	0	1	0	0	1	0	7	2	0	9	4	0	159	0	163	367
8:45 AM	197	4	0	0	201	0	0	0	0	0	0	5	2	0	7	1	0	139	0	140	348
Total	763	25	0	0	788	0	1	0	0	1	0	25	6	0	31	9	0	534	0	543	1363
Grand Total	1612	40	0	0	1652	0	7	0	0	7	0	54	10	0	64	15	0	1038	0	1053	2776
Approach %	97.6	2.4	0.0	0.0		0.0	100.0	0.0	0.0		0.0	84.4	15.6	0.0		1.4	0.0	98.6	0.0		
Total %	58.1	1.4	0.0	0.0	59.5	0.0	0.3	0.0	0.0	0.3	0.0	1.9	0.4	0.0	2.3	0.5	0.0	37.4	0.0	37.9	
Exiting Leg Total	1092					0					55					1629					2776
Cars	1543	35	0	0	1578	0	7	0	0	7	0	52	9	0	61	15	0	946	0	961	2607
% Cars	95.7	87.5	0.0	0.0	95.5	0.0	100.0	0.0	0.0	100.0	0.0	96.3	90.0	0.0	95.3	100.0	0.0	91.1	0.0	91.3	93.9
Exiting Leg Total	998					0					50					1559					2607
Heavy Vehicles	69	5	0	0	74	0	0	0	0	0	0	2	1	0	3	0	0	92	0	92	169
% Heavy Vehicles	4.3	12.5	0.0	0.0	4.5	0.0	0.0	0.0	0.0	0.0	0.0	3.7	10.0	0.0	4.7	0.0	0.0	8.9	0.0	8.7	6.1
Exiting Leg Total	94					0					5					70					169

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:15 AM	Lowell Road (Route 3A)					Driveway					County Road (North)					Lowell Road (Route 3A)					Total
	from North					from Northeast					from East					from South					
	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Left	U-Turn	Total	Right	Bear Right	Thru	U-Turn	Total	
7:15 AM	205	5	0	0	210	0	1	0	0	1	0	6	0	0	6	2	0	123	0	125	342
7:30 AM	214	2	0	0	216	0	2	0	0	2	0	6	1	0	7	1	0	146	0	147	372
7:45 AM	243	7	0	0	250	0	2	0	0	2	0	8	2	0	10	2	0	112	0	114	376
8:00 AM	198	11	0	0	209	0	0	0	0	0	0	9	1	0	10	1	0	138	0	139	358
Total Volume	860	25	0	0	885	0	5	0	0	5	0	29	4	0	33	6	0	519	0	525	1448
% Approach Total	97.2	2.8	0.0	0.0		0.0	100.0	0.0	0.0		0.0	87.9	12.1	0.0		1.1	0.0	98.9	0.0		
PHF	0.885	0.568	0.000	0.000	0.885	0.000	0.625	0.000	0.000	0.625	0.000	0.806	0.500	0.000	0.825	0.750	0.000	0.889	0.000	0.893	0.963
Cars	826	22	0	0	848	0	5	0	0	5	0	29	3	0	32	6	0	486	0	492	1377
Cars %	96.0	88.0	0.0	0.0	95.8	0.0	100.0	0.0	0.0	100.0	0.0	100.0	75.0	0.0	97.0	100.0	0.0	93.6	0.0	93.7	95.1
Heavy Vehicles	34	3	0	0	37	0	0	0	0	0	0	0	1	0	1	0	0	33	0	33	71
Heavy Vehicles %	4.0	12.0	0.0	0.0	4.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	25.0	0.0	3.0	0.0	0.0	6.4	0.0	6.3	4.9
Cars Enter Leg	826	22	0	0	848	0	5	0	0	5	0	29	3	0	32	6	0	486	0	492	1377
Heavy Enter Leg	34	3	0	0	37	0	0	0	0	0	0	0	1	0	1	0	0	33	0	33	71
Total Entering Leg	860	25	0	0	885	0	5	0	0	5	0	29	4	0	33	6	0	519	0	525	1448
Cars Exiting Leg	515					0					28					834					1377
Heavy Exiting Leg	33					0					3					35					71
Total Exiting Leg	548					0					31					869					1448

PDI File #: **239338 C**
 Location: **N: Lowell Road (Route 3A) S: Lowell Road (Route 3A) NE: Driveway**
 Location: **E: County Road (North)**
 City, State: **Hudson, NH**
 Client: **TF Moran/ J. Porter**
 Site Code: **18149.00**
 Count Date: **Thursday, May 4, 2023**
 Start Time: **7:00 AM**
 End Time: **9:00 AM**
 Class:



Cars

	Lowell Road (Route 3A)					Driveway					County Road (North)					Lowell Road (Route 3A)					Total					
	from North					from Northeast					from East					from South										
	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Left	U-Turn	Total	Right	Bear Right	Thru	U-Turn	Total						
7:00 AM	181	1	0	0	182	0	1	0	0	1	0	7	1	0	8	1	0	115	0	116	307					
7:15 AM	198	4	0	0	202	0	1	0	0	1	0	6	0	0	6	2	0	113	0	115	324					
7:30 AM	208	2	0	0	210	0	2	0	0	2	0	6	0	0	6	1	0	141	0	142	360					
7:45 AM	233	5	0	0	238	0	2	0	0	2	0	8	2	0	10	2	0	107	0	109	359					
Total	820	12	0	0	832	0	6	0	0	6	0	27	3	0	30	6	0	476	0	482	1350					
8:00 AM	187	11	0	0	198	0	0	0	0	0	0	9	1	0	10	1	0	125	0	126	334					
8:15 AM	169	5	0	0	174	0	0	0	0	0	0	4	1	0	5	3	0	86	0	89	268					
8:30 AM	180	3	0	0	183	0	1	0	0	1	0	7	2	0	9	4	0	132	0	136	329					
8:45 AM	187	4	0	0	191	0	0	0	0	0	0	5	2	0	7	1	0	127	0	128	326					
Total	723	23	0	0	746	0	1	0	0	1	0	25	6	0	31	9	0	470	0	479	1257					
Grand Total	1543	35	0	0	1578	0	7	0	0	7	0	52	9	0	61	15	0	946	0	961	2607					
Approach %	97.8	2.2	0.0	0.0		0.0	100.0	0.0	0.0		0.0	85.2	14.8	0.0		1.6	0.0	98.4	0.0							
Total %	59.2	1.3	0.0	0.0	60.5	0.0	0.3	0.0	0.0	0.3	0.0	2.0	0.3	0.0	2.3	0.6	0.0	36.3	0.0	36.9						
Exiting Leg Total						998					0					50					1559					2607

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

	Lowell Road (Route 3A)					Driveway					County Road (North)					Lowell Road (Route 3A)					Total					
	from North					from Northeast					from East					from South										
	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Left	U-Turn	Total	Right	Bear Right	Thru	U-Turn	Total						
7:15 AM	198	4	0	0	202	0	1	0	0	1	0	6	0	0	6	2	0	113	0	115	324					
7:30 AM	208	2	0	0	210	0	2	0	0	2	0	6	0	0	6	1	0	141	0	142	360					
7:45 AM	233	5	0	0	238	0	2	0	0	2	0	8	2	0	10	2	0	107	0	109	359					
8:00 AM	187	11	0	0	198	0	0	0	0	0	0	9	1	0	10	1	0	125	0	126	334					
Total Volume	826	22	0	0	848	0	5	0	0	5	0	29	3	0	32	6	0	486	0	492	1377					
% Approach Total	97.4	2.6	0.0	0.0		0.0	100.0	0.0	0.0		0.0	90.6	9.4	0.0		1.2	0.0	98.8	0.0							
PHF	0.886	0.500	0.000	0.000	0.891	0.000	0.625	0.000	0.000	0.625	0.000	0.806	0.375	0.000	0.800	0.750	0.000	0.862	0.000	0.866	0.956					
Entering Leg	826	22	0	0	848	0	5	0	0	5	0	29	3	0	32	6	0	486	0	492	1377					
Exiting Leg						515					0					28					834					1377
Total						1363					5					60					1326					2754

PDI File #: **239338 C**
 Location: **N: Lowell Road (Route 3A) S: Lowell Road (Route 3A) NE: Driveway**
 Location: **E: County Road (North)**
 City, State: **Hudson, NH**
 Client: **TF Moran/ J. Porter**
 Site Code: **18149.00**
 Count Date: **Thursday, May 4, 2023**
 Start Time: **7:00 AM**
 End Time: **9:00 AM**



Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)

	Lowell Road (Route 3A)					Driveway					County Road (North)					Lowell Road (Route 3A)					Total
	from North					from Northeast					from East					from South					
	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Left	U-Turn	Total	Right	Bear Right	Thru	U-Turn	Total	
7:00 AM	6	0	0	0	6	0	0	0	0	0	0	2	0	0	2	0	0	8	0	8	16
7:15 AM	7	1	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	10	0	10	18
7:30 AM	6	0	0	0	6	0	0	0	0	0	0	0	1	0	1	0	0	5	0	5	12
7:45 AM	10	2	0	0	12	0	0	0	0	0	0	0	0	0	0	0	0	5	0	5	17
Total	29	3	0	0	32	0	0	0	0	0	0	2	1	0	3	0	0	28	0	28	63
8:00 AM	11	0	0	0	11	0	0	0	0	0	0	0	0	0	0	0	0	13	0	13	24
8:15 AM	9	1	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	12	0	12	22
8:30 AM	10	1	0	0	11	0	0	0	0	0	0	0	0	0	0	0	0	27	0	27	38
8:45 AM	10	0	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	12	0	12	22
Total	40	2	0	0	42	0	0	0	0	0	0	0	0	0	0	0	0	64	0	64	106
Grand Total	69	5	0	0	74	0	0	0	0	0	0	2	1	0	3	0	0	92	0	92	169
Approach %	93.2	6.8	0.0	0.0		0.0	0.0	0.0	0.0		0.0	66.7	33.3	0.0		0.0	0.0	100.0	0.0		
Total %	40.8	3.0	0.0	0.0	43.8	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.6	0.0	1.8	0.0	0.0	54.4	0.0	54.4	
Exiting Leg Total	94					0					5					70					169
Buses	12	3	0	0	15	0	0	0	0	0	0	2	0	0	2	0	0	23	0	23	40
% Buses	17.4	60.0	0.0	0.0	20.3	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	66.7	0.0	0.0	25.0	0.0	25.0	23.7
Exiting Leg Total	25					0					3					12					40
Single-Unit Trucks	48	2	0	0	50	0	0	0	0	0	0	0	1	0	1	0	0	57	0	57	108
% Single-Unit	69.6	40.0	0.0	0.0	67.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	33.3	0.0	0.0	62.0	0.0	62.0	63.9
Exiting Leg Total	57					0					2					49					108
Articulated Trucks	9	0	0	0	9	0	0	0	0	0	0	0	0	0	0	0	0	12	0	12	21
% Articulated	13.0	0.0	0.0	0.0	12.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.0	0.0	13.0	12.4
Exiting Leg Total	12					0					0					9					21

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

	Lowell Road (Route 3A)					Driveway					County Road (North)					Lowell Road (Route 3A)					Total
	from North					from Northeast					from East					from South					
	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Left	U-Turn	Total	Right	Bear Right	Thru	U-Turn	Total	
8:00 AM	11	0	0	0	11	0	0	0	0	0	0	0	0	0	0	0	0	13	0	13	24
8:15 AM	9	1	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	12	0	12	22
8:30 AM	10	1	0	0	11	0	0	0	0	0	0	0	0	0	0	0	0	27	0	27	38
8:45 AM	10	0	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	12	0	12	22
Total Volume	40	2	0	0	42	0	0	0	0	0	0	0	0	0	0	0	0	64	0	64	106
% Approach Total	95.2	4.8	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	100.0	0.0		
PHF	0.909	0.500	0.000	0.000	0.955	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.593	0.000	0.593	0.697
Buses	8	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	18	0	18	26
Buses %	20.0	0.0	0.0	0.0	19.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	28.1	0.0	28.1	24.5
Single-Unit Trucks	26	2	0	0	28	0	0	0	0	0	0	0	0	0	0	0	0	39	0	39	67
Single-Unit %	65.0	100.0	0.0	0.0	66.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	60.9	0.0	60.9	63.2
Articulated Trucks	6	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	7	0	7	13
Articulated %	15.0	0.0	0.0	0.0	14.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.9	0.0	10.9	12.3
Buses	8	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	18	0	18	26
Single-Unit Trucks	26	2	0	0	28	0	0	0	0	0	0	0	0	0	0	0	0	39	0	39	67
Articulated Trucks	6	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	7	0	7	13
Total Entering Leg	40	2	0	0	42	0	0	0	0	0	0	0	0	0	0	0	0	64	0	64	106
Buses	18					0					0					8					26
Single-Unit Trucks	39					0					2					26					67
Articulated Trucks	7					0					0					6					13
Total Exiting Leg	64					0					2					40					106

PDI File #: **239338 C**
 Location: **N: Lowell Road (Route 3A) S: Lowell Road (Route 3A) NE: Driveway**
 Location: **E: County Road (North)**
 City, State: **Hudson, NH**
 Client: **TF Moran/ J. Porter**
 Site Code: **18149.00**
 Count Date: **Thursday, May 4, 2023**
 Start Time: **7:00 AM**
 End Time: **9:00 AM**
 Class:



Buses

	Lowell Road (Route 3A)					Driveway					County Road (North)					Lowell Road (Route 3A)					Total		
	from North					from Northeast					from East					from South							
	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Left	U-Turn	Total	Right	Bear Right	Thru	U-Turn	Total			
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	1	0	1	3		
7:15 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	4		
7:30 AM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2		
7:45 AM	3	2	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5		
Total	4	3	0	0	7	0	0	0	0	0	0	2	0	0	2	0	0	5	0	5	14		
8:00 AM	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	3		
8:15 AM	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	4	0	4	7		
8:30 AM	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	10	0	10	13		
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	3		
Total	8	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	18	0	18	26		
Grand Total	12	3	0	0	15	0	0	0	0	0	0	2	0	0	2	0	0	23	0	23	40		
Approach %	80.0	20.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	100.0	0.0				
Total %	30.0	7.5	0.0	0.0	37.5	0.0	0.0	0.0	0.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0	0.0	57.5	0.0	57.5			
Exiting Leg Total						25					0					3					12		40

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

	Lowell Road (Route 3A)					Driveway					County Road (North)					Lowell Road (Route 3A)					Total		
	from North					from Northeast					from East					from South							
	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Left	U-Turn	Total	Right	Bear Right	Thru	U-Turn	Total			
7:45 AM	3	2	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5		
8:00 AM	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	3		
8:15 AM	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	4	0	4	7		
8:30 AM	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	10	0	10	13		
Total Volume	11	2	0	0	13	0	0	0	0	0	0	0	0	0	0	0	0	15	0	15	28		
% Approach Total	84.6	15.4	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	100.0	0.0				
PHF	0.917	0.250	0.000	0.000	0.650	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.375	0.000	0.375	0.538		
Entering Leg	11	2	0	0	13	0	0	0	0	0	0	0	0	0	0	0	0	15	0	15	28		
Exiting Leg						15					0					2					11	28	
Total						28					0					2					26		56

PDI File #: **239338 C**
 Location: **N: Lowell Road (Route 3A) S: Lowell Road (Route 3A) NE: Driveway**
 Location: **E: County Road (North)**
 City, State: **Hudson, NH**
 Client: **TF Moran/ J. Porter**
 Site Code: **18149.00**
 Count Date: **Thursday, May 4, 2023**
 Start Time: **7:00 AM**
 End Time: **9:00 AM**
 Class:



Single-Unit Trucks

	Lowell Road (Route 3A)					Driveway					County Road (North)					Lowell Road (Route 3A)					Total
	from North					from Northeast					from East					from South					
	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Left	U-Turn	Total	Right	Bear Right	Thru	U-Turn	Total	
7:00 AM	5	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	4	0	4	9
7:15 AM	6	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	5	0	5	11
7:30 AM	5	0	0	0	5	0	0	0	0	0	0	0	1	0	1	0	0	4	0	4	10
7:45 AM	6	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	5	0	5	11
Total	22	0	0	0	22	0	0	0	0	0	0	0	1	0	1	0	0	18	0	18	41
8:00 AM	7	0	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	9	0	9	16
8:15 AM	5	1	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	6	0	6	12
8:30 AM	6	1	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	16	0	16	23
8:45 AM	8	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	8	0	8	16
Total	26	2	0	0	28	0	0	0	0	0	0	0	0	0	0	0	0	39	0	39	67
Grand Total	48	2	0	0	50	0	0	0	0	0	0	0	1	0	1	0	0	57	0	57	108
Approach %	96.0	4.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	100.0	0.0		0.0	0.0	100.0	0.0		
Total %	44.4	1.9	0.0	0.0	46.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.9	0.0	0.0	52.8	0.0	52.8	
Exiting Leg Total	57					0					2					49					108

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

	Lowell Road (Route 3A)					Driveway					County Road (North)					Lowell Road (Route 3A)					Total
	from North					from Northeast					from East					from South					
	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Left	U-Turn	Total	Right	Bear Right	Thru	U-Turn	Total	
8:00 AM	7	0	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	9	0	9	16
8:15 AM	5	1	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	6	0	6	12
8:30 AM	6	1	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	16	0	16	23
8:45 AM	8	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	8	0	8	16
Total Volume	26	2	0	0	28	0	0	0	0	0	0	0	0	0	0	0	0	39	0	39	67
% Approach Total	92.9	7.1	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	100.0	0.0		
PHF	0.813	0.500	0.000	0.000	0.875	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.609	0.000	0.609	0.728
Entering Leg	26	2	0	0	28	0	0	0	0	0	0	0	0	0	0	0	0	39	0	39	67
Exiting Leg	39					0					2					26					67
Total	67					0					2					65					134

PDI File #: **239338 C**
 Location: **N: Lowell Road (Route 3A) S: Lowell Road (Route 3A) NE: Driveway**
 Location: **E: County Road (North)**
 City, State: **Hudson, NH**
 Client: **TF Moran/ J. Porter**
 Site Code: **18149.00**
 Count Date: **Thursday, May 4, 2023**
 Start Time: **7:00 AM**
 End Time: **9:00 AM**
 Class:



Articulated Trucks

	Lowell Road (Route 3A)					Driveway					County Road (North)					Lowell Road (Route 3A)					Total
	from North					from Northeast					from East					from South					
	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Left	U-Turn	Total	Right	Bear Right	Thru	U-Turn	Total	
7:00 AM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	4
7:15 AM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	3
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	5	0	5	8
8:00 AM	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	5
8:15 AM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	3
8:30 AM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2
8:45 AM	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	3
Total	6	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	7	0	7	13
Grand Total	9	0	0	0	9	0	0	0	0	0	0	0	0	0	0	0	0	12	0	12	21
Approach %	100.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	100.0	0.0		
Total %	42.9	0.0	0.0	0.0	42.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	57.1	0.0	57.1	
Exiting Leg Total	12					0					0					9					21

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

8:00 AM	Lowell Road (Route 3A)					Driveway					County Road (North)					Lowell Road (Route 3A)					Total
	from North					from Northeast					from East					from South					
	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Left	U-Turn	Total	Right	Bear Right	Thru	U-Turn	Total	
8:00 AM	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	5
8:15 AM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	3
8:30 AM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2
8:45 AM	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	3
Total Volume	6	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	7	0	7	13
% Approach Total	100.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	100.0	0.0		
PHF	0.750	0.000	0.000	0.000	0.750	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.583	0.000	0.583	0.650
Entering Leg	6	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	7	0	7	13
Exiting Leg	7					0					0					6					13
Total	13					0					0					13					26

PDI File #: **239338 C**
 Location: **N: Lowell Road (Route 3A) S: Lowell Road (Route 3A) NE: Driveway**
 Location: **E: County Road (North)**
 City, State: **Hudson, NH**
 Client: **TF Moran/ J. Porter**
 Site Code: **18149.00**
 Count Date: **Thursday, May 4, 2023**
 Start Time: **2:00 PM**
 End Time: **6:00 PM**
 Class:



Cars and Heavy Vehicles (Combined)

	Lowell Road (Route 3A)					Driveway					County Road (North)					Lowell Road (Route 3A)					Total
	from North					from Northeast					from East					from South					
	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Left	U-Turn	Total	Right	Bear Right	Thru	U-Turn	Total	
2:00 PM	183	9	1	0	193	1	0	0	0	1	0	6	1	0	7	0	1	192	0	193	394
2:15 PM	205	8	1	0	214	1	0	0	0	1	0	8	0	0	8	1	0	206	0	207	430
2:30 PM	200	8	0	0	208	0	0	0	0	0	0	7	1	0	8	1	0	169	0	170	386
2:45 PM	159	13	0	0	172	1	0	0	0	1	0	3	2	0	5	3	0	191	0	194	372
Total	747	38	2	0	787	3	0	0	0	3	0	24	4	0	28	5	1	758	0	764	1582
3:00 PM	173	5	1	0	179	0	0	0	0	0	0	5	1	0	6	1	0	226	0	227	412
3:15 PM	219	13	1	0	233	0	1	0	0	1	0	9	1	0	10	2	1	185	0	188	432
3:30 PM	160	7	0	0	167	0	0	0	0	0	0	6	1	0	7	2	0	222	0	224	398
3:45 PM	186	10	0	0	196	0	0	0	0	0	0	9	1	0	10	1	0	195	0	196	402
Total	738	35	2	0	775	0	1	0	0	1	0	29	4	0	33	6	1	828	0	835	1644
4:00 PM	154	10	0	0	164	0	1	0	0	1	0	3	1	0	4	0	0	220	0	220	389
4:15 PM	182	7	0	0	189	0	0	0	0	0	0	4	2	0	6	5	0	229	0	234	429
4:30 PM	171	14	0	0	185	0	0	0	0	0	0	7	4	0	11	1	0	211	0	212	408
4:45 PM	192	10	0	0	202	0	0	0	0	0	0	8	0	0	8	2	0	213	0	215	425
Total	699	41	0	0	740	0	1	0	0	1	0	22	7	0	29	8	0	873	0	881	1651
5:00 PM	165	17	0	0	182	0	0	0	0	0	0	11	1	0	12	0	0	224	0	224	418
5:15 PM	200	7	0	0	207	0	0	0	0	0	0	9	1	0	10	2	0	228	1	231	448
5:30 PM	175	12	0	0	187	0	0	0	0	0	0	3	0	0	3	2	0	234	0	236	426
5:45 PM	182	12	0	0	194	0	0	0	0	0	0	8	4	0	12	2	0	215	0	217	423
Total	722	48	0	0	770	0	0	0	0	0	0	31	6	0	37	6	0	901	1	908	1715
Grand Total	2906	162	4	0	3072	3	2	0	0	5	0	106	21	0	127	25	2	3360	1	3388	6592
Approach %	94.6	5.3	0.1	0.0		60.0	40.0	0.0	0.0		0.0	83.5	16.5	0.0		0.7	0.1	99.2	0.0		
Total %	44.1	2.5	0.1	0.0	46.6	0.0	0.0	0.0	0.0	0.1	0.0	1.6	0.3	0.0	1.9	0.4	0.0	51.0	0.0	51.4	
Exiting Leg Total	3469					6					187					2930					6592
Cars	2844	156	4	0	3004	3	2	0	0	5	0	105	21	0	126	25	2	3267	1	3295	6430
% Cars	97.9	96.3	100.0	0.0	97.8	100.0	100.0	0.0	0.0	100.0	0.0	99.1	100.0	0.0	99.2	100.0	100.0	97.2	100.0	97.3	97.5
Exiting Leg Total	3375					6					181					2868					6430
Heavy Vehicles	62	6	0	0	68	0	0	0	0	0	0	1	0	0	1	0	0	93	0	93	162
% Heavy Vehicles	2.1	3.7	0.0	0.0	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.0	0.8	0.0	0.0	2.8	0.0	2.7	2.5
Exiting Leg Total	94					0					6					62					162

Peak Hour Analysis from 02:00 PM to 06:00 PM begins at:

4:45 PM	Lowell Road (Route 3A)					Driveway					County Road (North)					Lowell Road (Route 3A)					Total
	from North					from Northeast					from East					from South					
	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Left	U-Turn	Total	Right	Bear Right	Thru	U-Turn	Total	
4:45 PM	192	10	0	0	202	0	0	0	0	0	0	8	0	0	8	2	0	213	0	215	425
5:00 PM	165	17	0	0	182	0	0	0	0	0	0	11	1	0	12	0	0	224	0	224	418
5:15 PM	200	7	0	0	207	0	0	0	0	0	0	9	1	0	10	2	0	228	1	231	448
5:30 PM	175	12	0	0	187	0	0	0	0	0	0	3	0	0	3	2	0	234	0	236	426
Total Volume	732	46	0	0	778	0	0	0	0	0	0	31	2	0	33	6	0	899	1	906	1717
% Approach Total	94.1	5.9	0.0	0.0		0.0	0.0	0.0	0.0		0.0	93.9	6.1	0.0		0.7	0.0	99.2	0.1		
PHF	0.915	0.676	0.000	0.000	0.940	0.000	0.000	0.000	0.000	0.000	0.000	0.705	0.500	0.000	0.688	0.750	0.000	0.960	0.250	0.960	0.958
Cars	726	46	0	0	772	0	0	0	0	0	0	31	2	0	33	6	0	888	1	895	1700
Cars %	99.2	100.0	0.0	0.0	99.2	0.0	0.0	0.0	0.0	0.0	0.0	100.0	100.0	0.0	100.0	100.0	0.0	98.8	100.0	98.8	99.0
Heavy Vehicles	6	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	11	0	11	17
Heavy Vehicles %	0.8	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.0	1.2	1.0
Cars Enter Leg	726	46	0	0	772	0	0	0	0	0	0	31	2	0	33	6	0	888	1	895	1700
Heavy Enter Leg	6	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	11	0	11	17
Total Entering Leg	732	46	0	0	778	0	0	0	0	0	0	31	2	0	33	6	0	899	1	906	1717
Cars Exiting Leg	919					0					52					729					1700
Heavy Exiting Leg	11					0					0					6					17
Total Exiting Leg	930					0					52					735					1717

PDI File #: **239338 C**
 Location: **N: Lowell Road (Route 3A) S: Lowell Road (Route 3A) NE: Driveway**
 Location: **E: County Road (North)**
 City, State: **Hudson, NH**
 Client: **TF Moran/ J. Porter**
 Site Code: **18149.00**
 Count Date: **Thursday, May 4, 2023**
 Start Time: **2:00 PM**
 End Time: **6:00 PM**
 Class:



Cars

	Lowell Road (Route 3A)					Driveway					County Road (North)					Lowell Road (Route 3A)					Total
	from North					from Northeast					from East					from South					
	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Left	U-Turn	Total	Right	Bear Right	Thru	U-Turn	Total	
2:00 PM	177	9	1	0	187	1	0	0	0	1	0	6	1	0	7	0	1	184	0	185	380
2:15 PM	197	7	1	0	205	1	0	0	0	1	0	8	0	0	8	1	0	200	0	201	415
2:30 PM	191	7	0	0	198	0	0	0	0	0	0	6	1	0	7	1	0	161	0	162	367
2:45 PM	153	12	0	0	165	1	0	0	0	1	0	3	2	0	5	3	0	180	0	183	354
Total	718	35	2	0	755	3	0	0	0	3	0	23	4	0	27	5	1	725	0	731	1516
3:00 PM	167	4	1	0	172	0	0	0	0	0	0	5	1	0	6	1	0	211	0	212	390
3:15 PM	211	13	1	0	225	0	1	0	0	1	0	9	1	0	10	2	1	175	0	178	414
3:30 PM	159	6	0	0	165	0	0	0	0	0	0	6	1	0	7	2	0	217	0	219	391
3:45 PM	185	10	0	0	195	0	0	0	0	0	0	9	1	0	10	1	0	190	0	191	396
Total	722	33	2	0	757	0	1	0	0	1	0	29	4	0	33	6	1	793	0	800	1591
4:00 PM	151	10	0	0	161	0	1	0	0	1	0	3	1	0	4	0	0	213	0	213	379
4:15 PM	180	6	0	0	186	0	0	0	0	0	0	4	2	0	6	5	0	225	0	230	422
4:30 PM	168	14	0	0	182	0	0	0	0	0	0	7	4	0	11	1	0	210	0	211	404
4:45 PM	192	10	0	0	202	0	0	0	0	0	0	8	0	0	8	2	0	211	0	213	423
Total	691	40	0	0	731	0	1	0	0	1	0	22	7	0	29	8	0	859	0	867	1628
5:00 PM	163	17	0	0	180	0	0	0	0	0	0	11	1	0	12	0	0	219	0	219	411
5:15 PM	198	7	0	0	205	0	0	0	0	0	0	9	1	0	10	2	0	227	1	230	445
5:30 PM	173	12	0	0	185	0	0	0	0	0	0	3	0	0	3	2	0	231	0	233	421
5:45 PM	179	12	0	0	191	0	0	0	0	0	0	8	4	0	12	2	0	213	0	215	418
Total	713	48	0	0	761	0	0	0	0	0	0	31	6	0	37	6	0	890	1	897	1695
Grand Total	2844	156	4	0	3004	3	2	0	0	5	0	105	21	0	126	25	2	3267	1	3295	6430
Approach %	94.7	5.2	0.1	0.0		60.0	40.0	0.0	0.0		0.0	83.3	16.7	0.0		0.8	0.1	99.2	0.0		
Total %	44.2	2.4	0.1	0.0	46.7	0.0	0.0	0.0	0.0	0.1	0.0	1.6	0.3	0.0	2.0	0.4	0.0	50.8	0.0	51.2	
Exiting Leg Total	3375					6					181					2868					6430

Peak Hour Analysis from 02:00 PM to 06:00 PM begins at:

	Lowell Road (Route 3A)					Driveway					County Road (North)					Lowell Road (Route 3A)					Total
	from North					from Northeast					from East					from South					
	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Left	U-Turn	Total	Right	Bear Right	Thru	U-Turn	Total	
4:45 PM	192	10	0	0	202	0	0	0	0	0	0	8	0	0	8	2	0	211	0	213	423
5:00 PM	163	17	0	0	180	0	0	0	0	0	0	11	1	0	12	0	0	219	0	219	411
5:15 PM	198	7	0	0	205	0	0	0	0	0	0	9	1	0	10	2	0	227	1	230	445
5:30 PM	173	12	0	0	185	0	0	0	0	0	0	3	0	0	3	2	0	231	0	233	421
Total Volume	726	46	0	0	772	0	0	0	0	0	0	31	2	0	33	6	0	888	1	895	1700
% Approach Total	94.0	6.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	93.9	6.1	0.0		0.7	0.0	99.2	0.1		
PHF	0.917	0.676	0.000	0.000	0.941	0.000	0.000	0.000	0.000	0.000	0.000	0.705	0.500	0.000	0.688	0.750	0.000	0.961	0.250	0.960	0.955
Entering Leg	726	46	0	0	772	0	0	0	0	0	0	31	2	0	33	6	0	888	1	895	1700
Exiting Leg	919					0					52					729					1700
Total	1691					0					85					1624					3400

PDI File #: **239338 C**
 Location: **N: Lowell Road (Route 3A) S: Lowell Road (Route 3A) NE: Driveway**
 Location: **E: County Road (North)**
 City, State: **Hudson, NH**
 Client: **TF Moran/ J. Porter**
 Site Code: **18149.00**
 Count Date: **Thursday, May 4, 2023**
 Start Time: **2:00 PM**
 End Time: **6:00 PM**



Class: Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)

	Lowell Road (Route 3A)					Driveway					County Road (North)					Lowell Road (Route 3A)					Total
	from North					from Northeast					from East					from South					
	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Left	U-Turn	Total	Right	Bear Right	Thru	U-Turn	Total	
2:00 PM	6	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	8	0	8	14
2:15 PM	8	1	0	0	9	0	0	0	0	0	0	0	0	0	0	0	0	6	0	6	15
2:30 PM	9	1	0	0	10	0	0	0	0	0	0	1	0	0	1	0	0	8	0	8	19
2:45 PM	6	1	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	11	0	11	18
Total	29	3	0	0	32	0	0	0	0	0	0	1	0	0	1	0	0	33	0	33	66
3:00 PM	6	1	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	15	0	15	22
3:15 PM	8	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	10	0	10	18
3:30 PM	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	5	0	5	7
3:45 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	5	0	5	6
Total	16	2	0	0	18	0	0	0	0	0	0	0	0	0	0	0	0	35	0	35	53
4:00 PM	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	7	0	7	10
4:15 PM	2	1	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	4	0	4	7
4:30 PM	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	4
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
Total	8	1	0	0	9	0	0	0	0	0	0	0	0	0	0	0	0	14	0	14	23
5:00 PM	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	5	0	5	7
5:15 PM	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	3
5:30 PM	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	5
5:45 PM	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	5
Total	9	0	0	0	9	0	0	0	0	0	0	0	0	0	0	0	0	11	0	11	20
Grand Total	62	6	0	0	68	0	0	0	0	0	0	1	0	0	1	0	0	93	0	93	162
Approach %	91.2	8.8	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	100.0	0.0		
Total %	38.3	3.7	0.0	0.0	42.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.6	0.0	0.0	57.4	0.0	57.4	
Exiting Leg Total	94					0					6					62					162
Buses	21	5	0	0	26	0	0	0	0	0	0	1	0	0	1	0	0	24	0	24	51
% Buses	33.9	83.3	0.0	0.0	38.2	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	100.0	0.0	0.0	25.8	0.0	25.8	31.5
Exiting Leg Total	25					0					5					21					51
Single-Unit Trucks	29	1	0	0	30	0	0	0	0	0	0	0	0	0	0	0	0	54	0	54	84
% Single-Unit	46.8	16.7	0.0	0.0	44.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	58.1	0.0	58.1	51.9
Exiting Leg Total	54					0					1					29					84
Articulated Trucks	12	0	0	0	12	0	0	0	0	0	0	0	0	0	0	0	0	15	0	15	27
% Articulated	19.4	0.0	0.0	0.0	17.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.1	0.0	16.1	16.7
Exiting Leg Total	15					0					0					12					27

Peak Hour Analysis from 02:00 PM to 06:00 PM begins at:

	Lowell Road (Route 3A)					Driveway					County Road (North)					Lowell Road (Route 3A)					Total
	from North					from Northeast					from East					from South					
	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Left	U-Turn	Total	Right	Bear Right	Thru	U-Turn	Total	
2:30 PM	9	1	0	0	10	0	0	0	0	0	0	1	0	0	1	0	0	8	0	8	19
2:45 PM	6	1	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	11	0	11	18
3:00 PM	6	1	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	15	0	15	22
3:15 PM	8	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	10	0	10	18
Total Volume	29	3	0	0	32	0	0	0	0	0	0	1	0	0	1	0	0	44	0	44	77
% Approach Total	90.6	9.4	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	100.0	0.0		
PHF	0.806	0.750	0.000	0.000	0.800	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.250	0.000	0.000	0.733	0.000	0.733	0.875
Buses	10	3	0	0	13	0	0	0	0	0	0	1	0	0	1	0	0	18	0	18	32
Buses %	34.5	100.0	0.0	0.0	40.6	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	100.0	0.0	0.0	40.9	0.0	40.9	41.6
Single-Unit Trucks	13	0	0	0	13	0	0	0	0	0	0	0	0	0	0	0	0	23	0	23	36
Single-Unit %	44.8	0.0	0.0	0.0	40.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	52.3	0.0	52.3	46.8
Articulated Trucks	6	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	9
Articulated %	20.7	0.0	0.0	0.0	18.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.8	0.0	6.8	11.7
Buses	10	3	0	0	13	0	0	0	0	0	0	1	0	0	1	0	0	18	0	18	32
Single-Unit Trucks	13	0	0	0	13	0	0	0	0	0	0	0	0	0	0	0	0	23	0	23	36
Articulated Trucks	6	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	9
Total Entering Leg	29	3	0	0	32	0	0	0	0	0	0	1	0	0	1	0	0	44	0	44	77
Buses	19					0					3					10					32

PDI File #: **239338 C**
 Location: **N: Lowell Road (Route 3A) S: Lowell Road (Route 3A) NE: Driveway**
 Location: **E: County Road (North)**
 City, State: **Hudson, NH**
 Client: **TF Moran/ J. Porter**
 Site Code: **18149.00**
 Count Date: **Thursday, May 4, 2023**
 Start Time: **2:00 PM**
 End Time: **6:00 PM**



Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)

	Lowell Road (Route 3A)					Driveway					County Road (North)					Lowell Road (Route 3A)					Total
	from North					from Northeast					from East					from South					
	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Left	U-Turn	Total	Right	Bear Right	Thru	U-Turn	Total	
Single-Unit Trucks					23					0					0					13	36
Articulated Trucks					3					0					0					6	9
Total Exiting Leg					45					0					3					29	77

PDI File #: **239338 C**
 Location: **N: Lowell Road (Route 3A) S: Lowell Road (Route 3A) NE: Driveway**
 Location: **E: County Road (North)**
 City, State: **Hudson, NH**
 Client: **TF Moran/ J. Porter**
 Site Code: **18149.00**
 Count Date: **Thursday, May 4, 2023**
 Start Time: **2:00 PM**
 End Time: **6:00 PM**
 Class:



Buses

	Lowell Road (Route 3A)					Driveway					County Road (North)					Lowell Road (Route 3A)					Total
	from North					from Northeast					from East					from South					
	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Left	U-Turn	Total	Right	Bear Right	Thru	U-Turn	Total	
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
2:15 PM	6	1	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
2:30 PM	3	1	0	0	4	0	0	0	0	0	0	1	0	0	1	0	0	1	0	1	6
2:45 PM	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	5
Total	10	3	0	0	13	0	0	0	0	0	0	1	0	0	1	0	0	6	0	6	20
3:00 PM	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	10	0	10	12
3:15 PM	5	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	4	0	4	9
3:30 PM	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	3
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	7	2	0	0	9	0	0	0	0	0	0	0	0	0	0	0	0	15	0	15	24
4:00 PM	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	3
4:15 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	6
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Grand Total	21	5	0	0	26	0	0	0	0	0	0	1	0	0	1	0	0	24	0	24	51
Approach %	80.8	19.2	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	100.0	0.0		
Total %	41.2	9.8	0.0	0.0	51.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	47.1	0.0	47.1	
Exiting Leg Total	25					0					5					21					51

Peak Hour Analysis from 02:00 PM to 06:00 PM begins at:

	Lowell Road (Route 3A)					Driveway					County Road (North)					Lowell Road (Route 3A)					Total
	from North					from Northeast					from East					from South					
	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Left	U-Turn	Total	Right	Bear Right	Thru	U-Turn	Total	
2:30 PM	3	1	0	0	4	0	0	0	0	0	0	1	0	0	1	0	0	1	0	1	6
2:45 PM	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	5
3:00 PM	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	10	0	10	12
3:15 PM	5	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	4	0	4	9
Total Volume	10	3	0	0	13	0	0	0	0	0	0	1	0	0	1	0	0	18	0	18	32
% Approach Total	76.9	23.1	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	100.0	0.0		
PHF	0.500	0.750	0.000	0.000	0.650	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.250	0.000	0.000	0.450	0.000	0.450	0.667
Entering Leg	10	3	0	0	13	0	0	0	0	0	0	1	0	0	1	0	0	18	0	18	32
Exiting Leg	19					0					3					10					32
Total	32					0					4					28					64

PDI File #: **239338 C**
 Location: **N: Lowell Road (Route 3A) S: Lowell Road (Route 3A) NE: Driveway**
 Location: **E: County Road (North)**
 City, State: **Hudson, NH**
 Client: **TF Moran/ J. Porter**
 Site Code: **18149.00**
 Count Date: **Thursday, May 4, 2023**
 Start Time: **2:00 PM**
 End Time: **6:00 PM**
 Class:



Single-Unit Trucks

	Lowell Road (Route 3A)					Driveway					County Road (North)					Lowell Road (Route 3A)					Total
	from North					from Northeast					from East					from South					
	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Left	U-Turn	Total	Right	Bear Right	Thru	U-Turn	Total	
2:00 PM	4	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	6
2:15 PM	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	5	0	5	7
2:30 PM	4	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	5	0	5	9
2:45 PM	4	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	7	0	7	11
Total	14	0	0	0	14	0	0	0	0	0	0	0	0	0	0	0	0	19	0	19	33
3:00 PM	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	5	0	5	8
3:15 PM	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	6	0	6	8
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	4	4
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	3
Total	5	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	18	0	18	23
4:00 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	6	0	6	7
4:15 PM	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	3
4:30 PM	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
Total	4	1	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	9	0	9	14
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	4	4
5:15 PM	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	3
5:30 PM	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	4
5:45 PM	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	3
Total	6	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	8	0	8	14
Grand Total	29	1	0	0	30	0	0	0	0	0	0	0	0	0	0	0	0	54	0	54	84
Approach %	96.7	3.3	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	100.0	0.0		
Total %	34.5	1.2	0.0	0.0	35.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	64.3	0.0	64.3	
Exiting Leg Total	54					0					1					29					84

Peak Hour Analysis from 02:00 PM to 06:00 PM begins at:

2:30 PM	Lowell Road (Route 3A)					Driveway					County Road (North)					Lowell Road (Route 3A)					Total
	from North					from Northeast					from East					from South					
	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Left	U-Turn	Total	Right	Bear Right	Thru	U-Turn	Total	
2:30 PM	4	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	5	0	5	9
2:45 PM	4	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	7	0	7	11
3:00 PM	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	5	0	5	8
3:15 PM	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	6	0	6	8
Total Volume	13	0	0	0	13	0	0	0	0	0	0	0	0	0	0	0	0	23	0	23	36
% Approach Total	100.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	100.0	0.0		
PHF	0.813	0.000	0.000	0.000	0.813	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.821	0.000	0.821	0.818
Entering Leg	13	0	0	0	13	0	0	0	0	0	0	0	0	0	0	0	0	23	0	23	36
Exiting Leg	23					0					0					13					36
Total	36					0					0					36					72

PDI File #: **239338 C**
 Location: **N: Lowell Road (Route 3A) S: Lowell Road (Route 3A) NE: Driveway**
 Location: **E: County Road (North)**
 City, State: **Hudson, NH**
 Client: **TF Moran/ J. Porter**
 Site Code: **18149.00**
 Count Date: **Thursday, May 4, 2023**
 Start Time: **2:00 PM**
 End Time: **6:00 PM**
 Class:



Articulated Trucks

	Lowell Road (Route 3A)					Driveway					County Road (North)					Lowell Road (Route 3A)					Total
	from North					from Northeast					from East					from South					
	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Left	U-Turn	Total	Right	Bear Right	Thru	U-Turn	Total	
2:00 PM	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	4	0	4	6
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
2:30 PM	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	4
2:45 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2
Total	5	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	8	0	8	13
3:00 PM	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
3:15 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	3
Total	4	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	6
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
4:30 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	3
5:00 PM	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	3
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
Total	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	5
Grand Total	12	0	0	0	12	0	0	0	0	0	0	0	0	0	0	0	0	15	0	15	27
Approach %	100.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	100.0	0.0		
Total %	44.4	0.0	0.0	0.0	44.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	55.6	0.0	55.6	
Exiting Leg Total	15					0					0					12					27

Peak Hour Analysis from 02:00 PM to 06:00 PM begins at:

2:00 PM	Lowell Road (Route 3A)					Driveway					County Road (North)					Lowell Road (Route 3A)					Total
	from North					from Northeast					from East					from South					
	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Left	U-Turn	Total	Right	Bear Right	Thru	U-Turn	Total	
2:00 PM	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	4	0	4	6
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
2:30 PM	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	4
2:45 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2
Total Volume	5	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	8	0	8	13
% Approach Total	100.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	100.0	0.0		
PHF	0.625	0.000	0.000	0.000	0.625	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.500	0.542
Entering Leg	5	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	8	0	8	13
Exiting Leg	8					0					0					5					13
Total	13					0					0					13					26

PDI File #: 239338 C

Location: N: Lowell Road (Route 3A) S: Lowell Road (Route 3A) NE: Driveway

Location: E: County Road (North)

City, State: Hudson, NH

Client: TF Moran/ J. Porter

Site Code: 18149.00

Count Date: Thursday, May 4, 2023

Start Time: 2:00 PM

End Time: 6:00 PM

Class:



Bicycles (on Roadway and Crosswalks)

	Lowell Road (Route 3A)							Driveway							County Road (North)							Lowell Road (Route 3A)							Total
	from North							from Northeast							from East							from South							
	Thru	Left	Hard Left	U-Turn	CW-EB	CW-WB	Total	Hard Right	Bear Left	Hard Left	U-Turn	CW-SEB	CW-NWB	Total	Hard Right	Right	Left	U-Turn	CW-SB	CW-NB	Total	Right	Bear Right	Thru	U-Turn	CW-WB	CW-EB	Total	
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
3:45 PM	0	0	0	0	0	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	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	1	
Grand Total	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	1	0	0	0	1	3	3	
Approach %	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	100.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	100.0	0.0	0.0	0.0			
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	66.7	66.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	33.3	0.0	0.0	0.0	33.3	
Exiting Leg Total							1					2									0						0	3	

Peak Hour Analysis from 02:00 PM to 06:00 PM begins at:

2:45 PM	Lowell Road (Route 3A)							Driveway							County Road (North)							Lowell Road (Route 3A)							Total
	from North							from Northeast							from East							from South							
	Thru	Left	Hard Left	U-Turn	CW-EB	CW-WB	Total	Hard Right	Bear Left	Hard Left	U-Turn	CW-SEB	CW-NWB	Total	Hard Right	Right	Left	U-Turn	CW-SB	CW-NB	Total	Right	Bear Right	Thru	U-Turn	CW-WB	CW-EB	Total	
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	
Total Volume	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	
% Approach Total	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	100.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0			
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000	0.000	0.000	0.000	0.500	
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	
Exiting Leg							0					2									0						0	2	
Total							0					4									0						0	4	

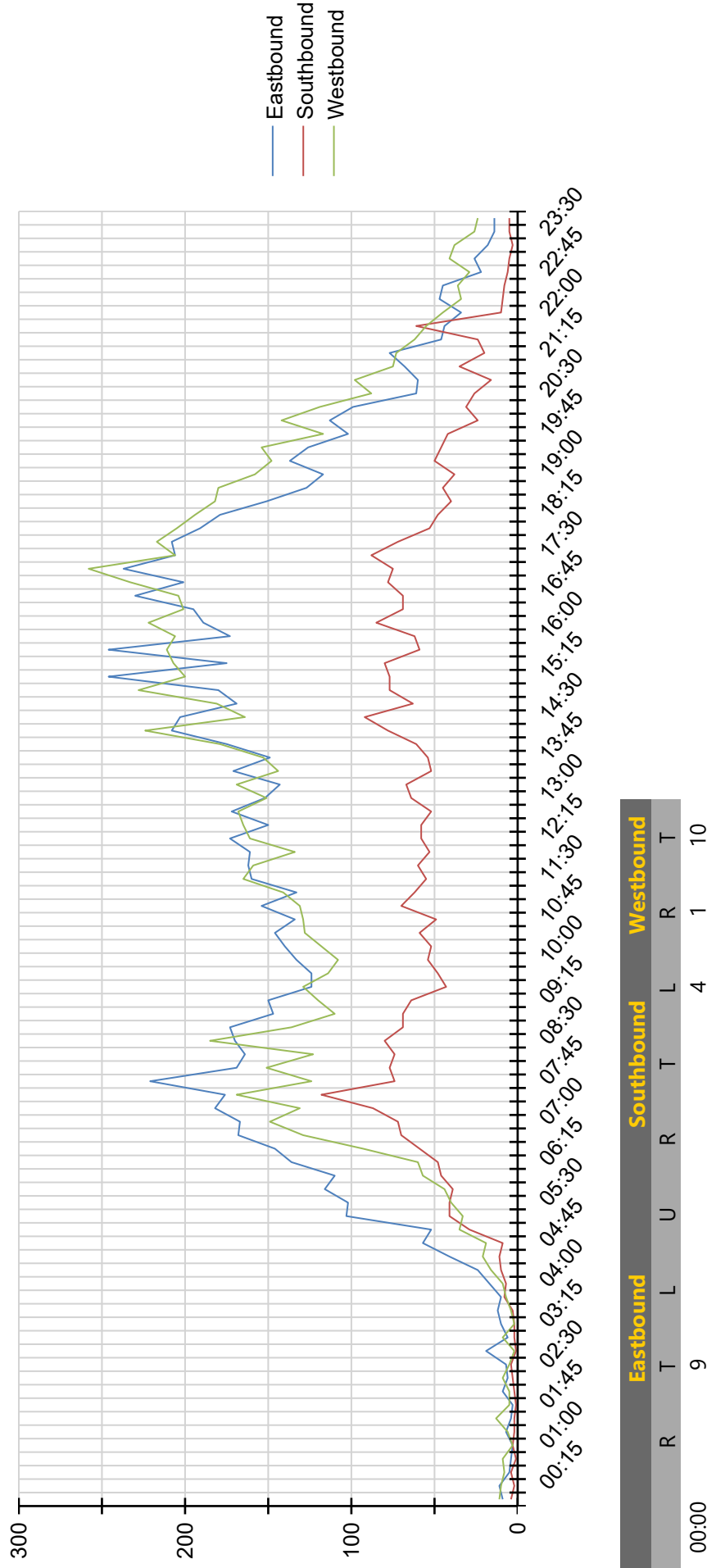
GRIDSMART[®]

Turning Movement Counts

Intersection Central & Lowell

Date 5/4/2023

	Right	Through	Left	UTurn	Total
Eastbound	9	9184	1560	3	10756
Southbound	1330	1	2752		4083
Westbound	1857	8436			10293
Total	3196	17621	4312	3	25132



Time	Eastbound			Southbound			Westbound		
	R	T	L	U	R	T	L	R	T
00:15	8	3					2	2	8
00:30	5			3			1	1	7
00:45	4						1		9
01:00	3			1			2	1	2
01:15	7						2	1	5
01:30	4						2	3	10
01:45	3				1				5
02:00	9				1		1	1	4
02:15	4	2			1		2	2	7
02:30	7				1		3		5
02:45	16	2	1		1				2
03:00	4	2					2	3	6
03:15	10						2	1	1
03:30	11	1					3		4
03:45	9	1			1		7		7
04:00	16	1			1		6	1	8
04:15	23	1			2		8	6	10
04:30	38	3			1		10	2	19
04:45	53	4			2		7	5	14
05:00	52				1		28	13	22
05:15	99	4			10		31	8	25
05:30	100	2			10		31	6	34
05:45	110	6			7		32	10	34
06:00	103	7			6		40	7	50
06:15	129	7			9		39	7	53
06:30	136	10			12		47	15	78



Intersection Central & Lowell
Date 5/4/2023

Turning Movement Counts

	Eastbound			Southbound			Westbound			
	R	T	L	U	R	T	L	R	T	
06:45		150	18		20		50	21		108
07:00		152	15		28		44	16		133
07:15		148	34		30		57	35		96
07:30		139	37		51		67	43		126
07:45		197	24		25		49	20		104
08:00		152	17		21		56	25		126
08:15		144	20		30		44	20		103
08:30		156	14		16		64	30		155
08:45		156	17		16		53	17		119
09:00		136	11		14		55	21		89
09:15		137	13		15		49	18		102
09:30		112	12		17		26	29		100
09:45		109	15		11		37	19		95
10:00		119	14		15		39	22		86
10:15		133	7		17		35	24		94
10:30		125	21		17		42	16		112
10:45		113	21		13		36	24		105
11:00	1	134	19		19		51	21		110
11:15		118	15		11		51	26		115
11:30	1	139	20		15		40	31		134
11:45		148	14		16		44	35		124
12:00		146	15		15		38	29		105
12:15	1	152	20		20		38	17		144
12:30		139	11		14		44	32		133
12:45	1	153	18		16		36	43		125
13:00		137	15		20		44	31		120

Intersection Central & Lowell
Date 5/4/2023

	Eastbound			Southbound			Westbound		
	R	T	L	U	R	T	L	R	T
13:15		125	18		20		47	26	143
13:30	1	152	18		17		35	23	121
13:45		124	25		21		33	20	133
14:00		145	30		15		46	45	134
14:15		170	38		40		38	43	181
14:30		171	32		41		51	26	138
14:45		141	28		27		36	36	145
15:00		145	35		25		52	27	201
15:15		186	60		23		54	25	175
15:30	2	138	35		33		47	35	172
15:45		187	59		20		39	40	171
16:00		146	27		19		43	36	170
16:15	1	143	45		31		54	52	170
16:30		148	47		20		49	22	179
16:45		179	51		23		46	29	175
17:00		149	52		34		44	51	182
17:15		185	52		22		53	30	228
17:30		156	50		27		61	30	176
17:45		174	34		31		41	41	176
18:00		151	40		14		39	45	160
18:15		150	29		15		33	26	168
18:30		135	16		7		33	33	149
18:45		112	15		12		33	30	150
19:00	1	93	23		18		20	39	119
19:15		112	25		21		29	29	119
19:30		106	20		27		19	37	117

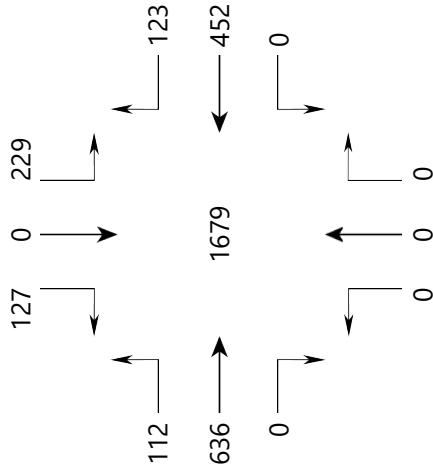
Intersection Central & Lowell
Date 5/4/2023

	Eastbound			Southbound			Westbound		
	R	T	L	U	R	T	L	R	T
19:45	82	20	14	1	27	20	97		
20:00	103	8	2	16	8	35	107		
20:15	84	15	10	10	21	25	94		
20:30	51	10	9	17	23	65			
20:45	46	14	5	11	18	80			
21:00	53	15	21	14	18	57			
21:15	70	7	7	13	16	57			
21:30	38	8	7	17	14	48			
21:45	36	8	44	17	7	48			
22:00	25	9	2	8	7	38			
22:15	39	8	4	5	4	30			
22:30	39	6	4	4	8	28			
22:45	20	2	2	4	8	21			
23:00	23	3	2	3	5	36			
23:15	17	1	3	6	32				
23:30	12	2	1	4	5	21			
23:45	7	7	3	2	1	23			
Total	9	9184	1560	3	1330	1	2752	1857	8436

Intersection Central & Lowell
Date 5/4/2023

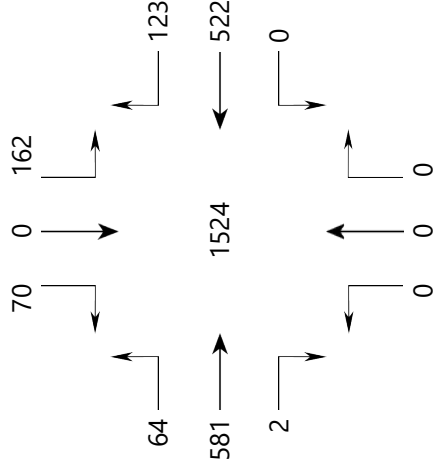
AM PEAK HOUR VOLUME (0:00-10:45)

FROM 07:15 TO 08:15



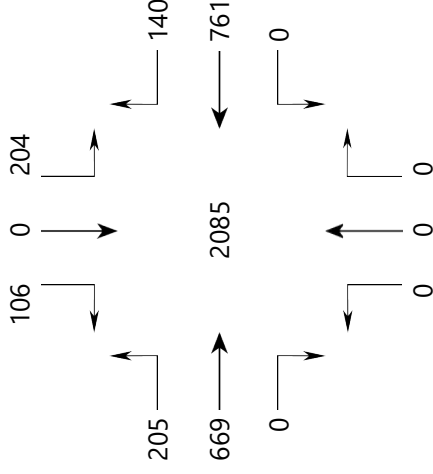
MID-DAY PEAK HOUR VOLUME (11:00-14:00)

FROM 12:15 TO 13:15



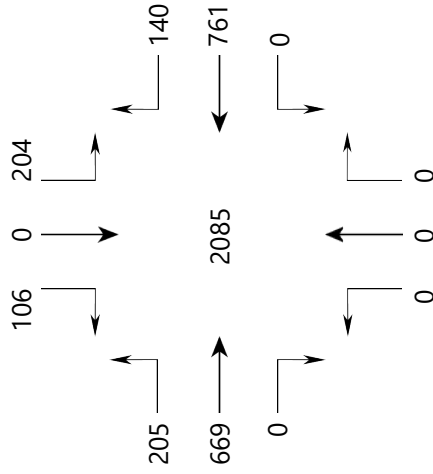
PM PEAK HOUR VOLUME (14:15-23:45)

FROM 16:45 TO 17:45



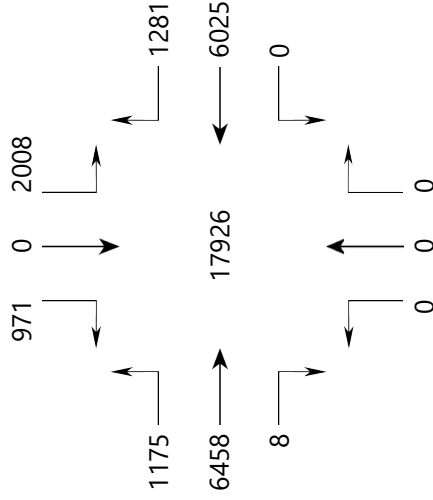
OVERALL PEAK HOUR VOLUME

FROM 16:45 TO 17:45



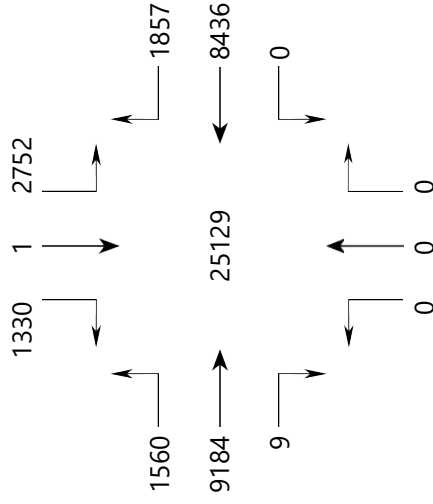
DAYTIME TOTAL VOLUME

FROM 07:00 TO 18:00



SELECTED TIME VOLUME

FROM 00:00 TO 23:59



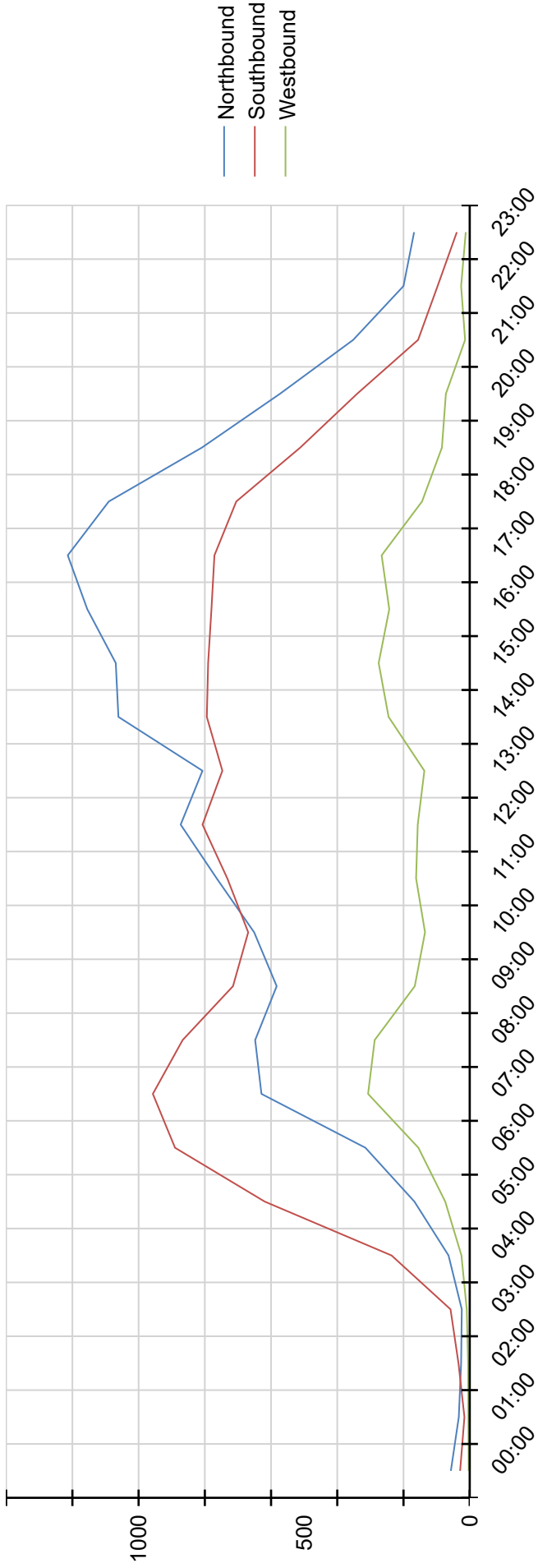
GRIDSMART[®]

Turning Movement Counts

Intersection Lowell & Pelham

Date 5/4/2023

	Right	Through	Left	UTurn	Total
Northbound	1088	12244			13332
Southbound	1	11343	1013	3	12360
Westbound	1357		1650		3007
Total	2446	23587	2663	3	28699





Turning Movement Counts

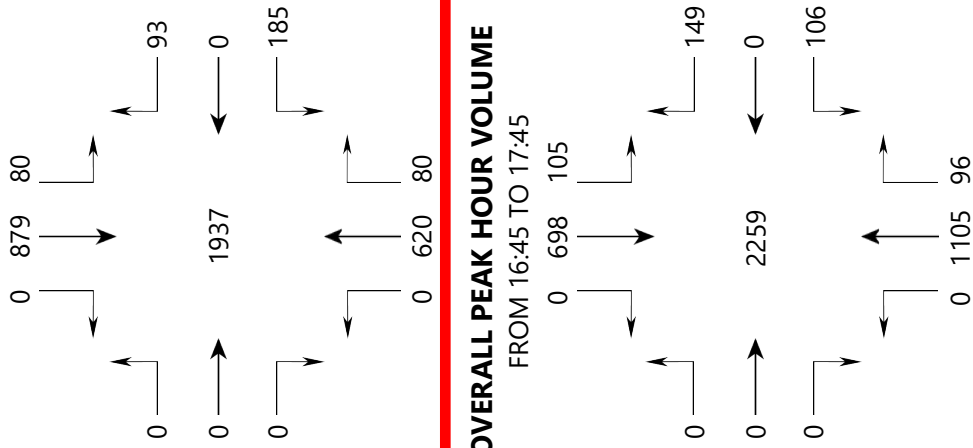
Intersection Lowell & Pelham
Date 5/4/2023

	Northbound			Southbound			Westbound		
	R	T	R	T	L	U	R	L	
00:00	3	54		25	4		2	1	
01:00		33		15	1		4		
02:00	2	24		32	2		2	3	
03:00	3	21		58			2	7	
04:00	2	62		236			4	21	
05:00	8	159		617	2		16	58	
06:00	14	301		868	22		60	95	
07:00	67	562		892	65		111	196	
08:00	68	580		785	82		136	151	
09:00	38	545		678	36	1	72	94	
10:00	50	601		619	49	1	48	87	
11:00	68	696		675	57		82	80	
12:00	67	806		743	64		75	82	
13:00	57	750		691	56		53	84	
14:00	118	943		717	77		87	158	
15:00	74	995		713	77		147	128	
16:00	101	1054		683	97		139	104	
17:00	100	1114	1	676	94		152	114	
18:00	88	1002		623	82		68	76	
19:00	69	740		452	59	1	38	46	
20:00	37	536		292	48		34	38	
21:00	31	321		138	18		8	6	
22:00	10	190		82	15		13	13	
23:00	13	155		33	6		4	8	
Total	1088	12244	1	11343	1013	3	1357	1650	

Intersection Lowell & Pelham
Date 5/4/2023

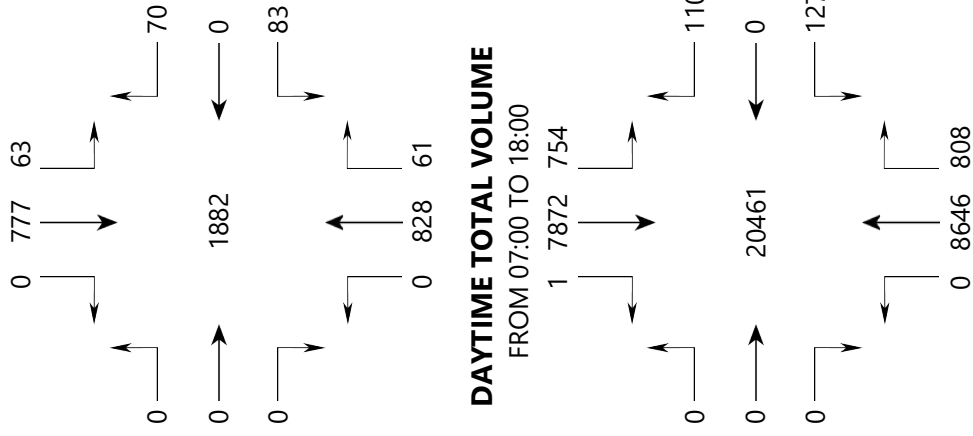
AM PEAK HOUR VOLUME (0:00-10:45)

FROM 07:15 TO 08:15



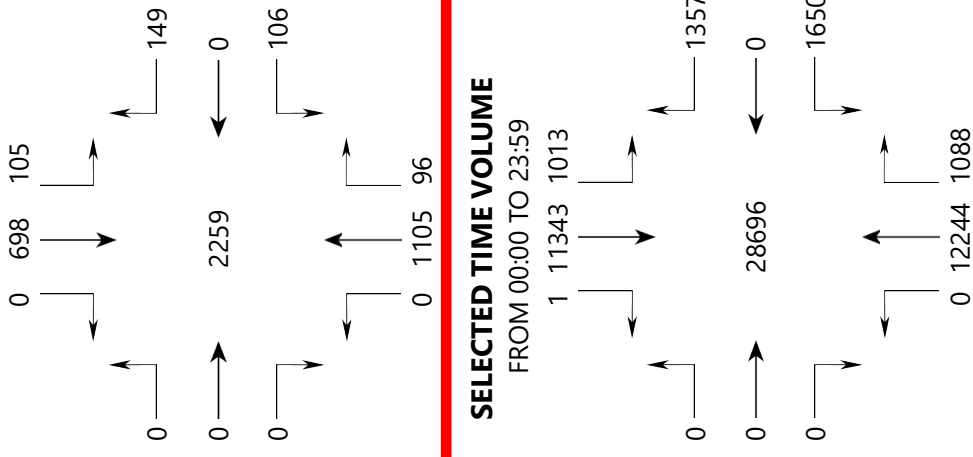
MID-DAY PEAK HOUR VOLUME (11:00-14:00)

FROM 12:15 TO 13:15



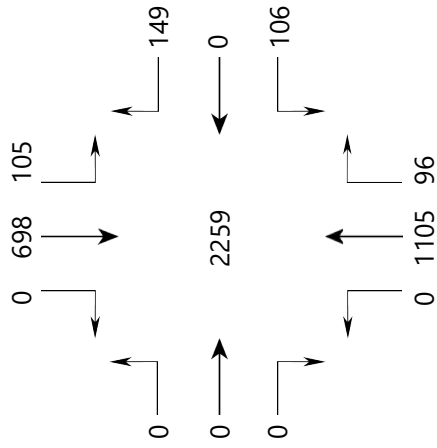
PM PEAK HOUR VOLUME (14:15-23:45)

FROM 16:45 TO 17:45



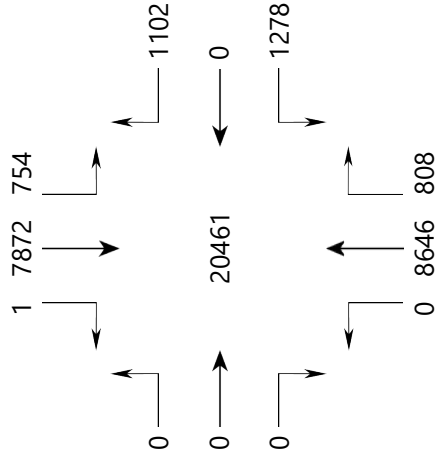
OVERALL PEAK HOUR VOLUME

FROM 16:45 TO 17:45



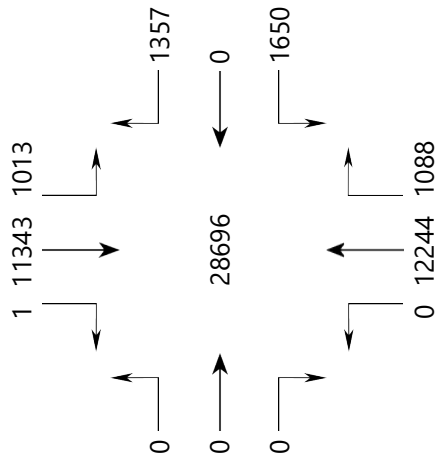
DAYTIME TOTAL VOLUME

FROM 07:00 TO 18:00



SELECTED TIME VOLUME

FROM 00:00 TO 23:59



APPENDIX J

Management

tor - Lowell Rd & Central St X

Phase Timing	Phase 1-8		
	1	2	3
Phase	8	10	8
Min Green	1.5	2.5	2.0
Passage	15	55	25
Max 1	20	60	25
Yellow Change	4.0	4.0	4.0
Red Clear	2.0	2.0	2.0
Walk	0	0	0
Ped Clear	0	0	0
Added Initial	0	0	0
Max Initial	0	0	0
Time B...	0	0	0



Notification bell icon, zoom level 1/2/3/4, map icon, eye icon, scale bar, 2.4x magnification, and pencil icon.

ent is available at GRIDSMART Cloud

1:00 PM



p: 2 o: 2 (1:2)

p: 5+ o: 5 (1:5)

p: 4 o: 4 (1:4)

p: 6 o: 6 (1:6)

p: 4 o: 4 (1:4)

APPENDIX K

