

**TRAFFIC IMPACT ASSESSMENT  
LOFTS AT 25 CANAL STREET  
ALLENSTOWN, NEW HAMPSHIRE  
April 17, 2020**

**INTRODUCTION**

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This study has been prepared for Brady Sullivan Properties, Inc. to assess the traffic impacts associated with the Lofts at 25 Canal Street, a redevelopment project that renovates three existing mill buildings into a multi-story residential apartment complex in Allenstown, New Hampshire. The subject site is located on the north side of Canal Street. The purpose of this report is to summarize the traffic count data collected, the trip generation characteristics of the proposed redevelopment project, the future traffic projections, the technical analysis, and our findings relative to traffic operations, capacity, and safety.

**PROPOSAL**

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The redevelopment proposal will result in the construction of 150 residential apartments in the three existing buildings known as the “China Mill”, “Store House” and “Waste House” at 25 Canal Street. Portions of the building are currently occupied by an industrial tenant and a hydroelectric power operation. The existing hydroelectric power operation will continue in place whereas the industrial tenant will vacate the building. The Existing Site Driveway B on Canal Street will remain and Proposed Site Driveway C will be constructed on Canal Street, south of the existing “Store House Building”. Existing Driveway A is located approximately 80-feet west of the Canal Street/Existing Site Driveway B intersection.

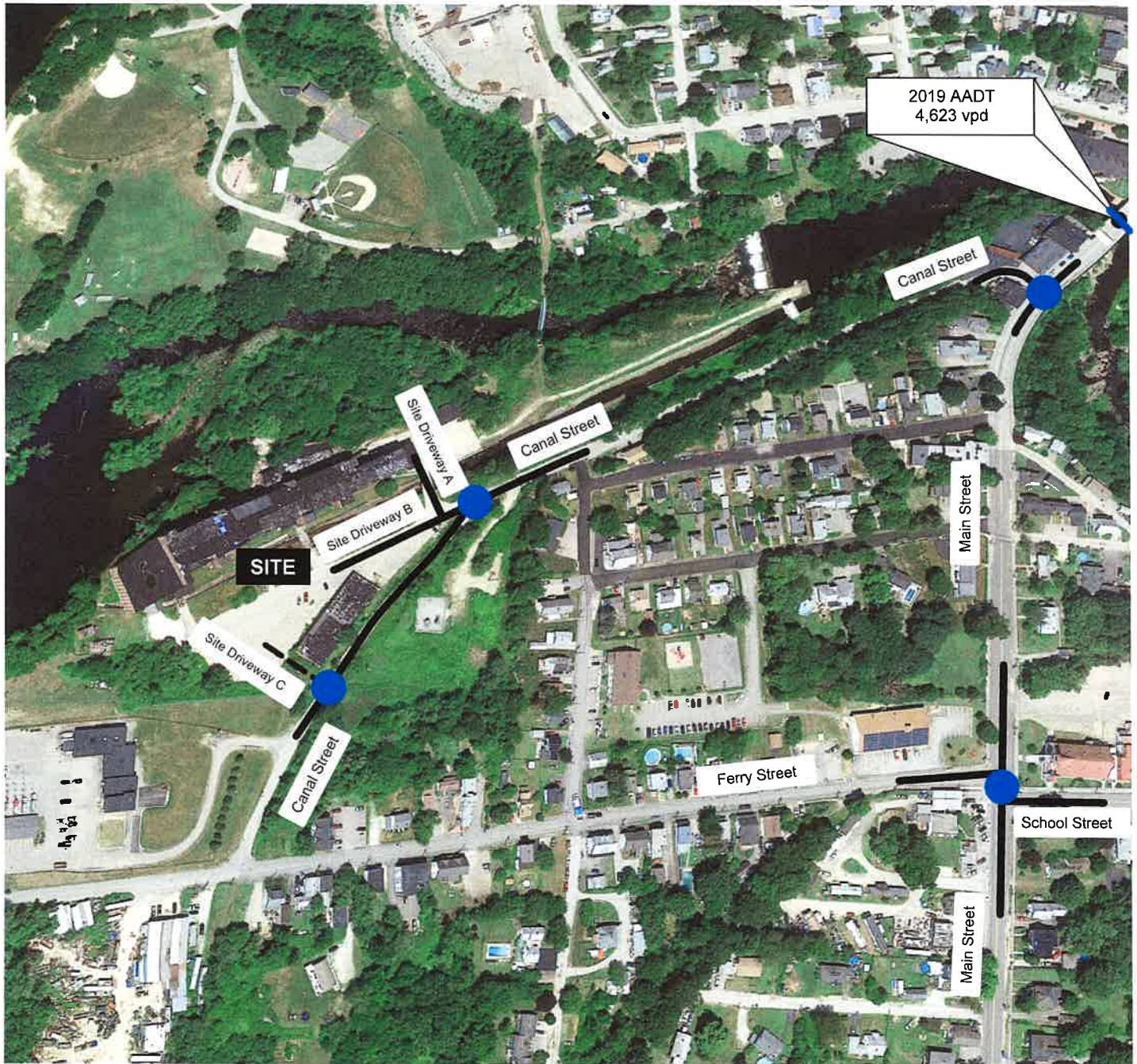
The location of the subject site and the four study area intersections with respect to the area roadway system are shown on Figure 1. The “*Preliminary Site Plan*” prepared by Hayner/Swanson, Inc. is found in Appendix A.



**STUDY SCOPE**

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Based on input from town staff at a meeting conducted on February 18, 2020, the study area includes four intersections: 1) Main Street/Ferry Street/School Street, 2) Main Street/Canal Street, 3) Canal Street/Site Driveway B, and 4) Canal Street/Proposed Site Driveway C. The analysis periods established for this study include the typical weekday morning and evening peak commuter periods, and the traffic projection years were set at 2021 and 2031.

At this “scoping” meeting it was also requested that the traffic study would include the distribution of site traffic on the US Route 3 corridor in the town of Pembroke.



-  = AUTOMATIC TRAFFIC RECORDER LOCATION (NH DOT)
-  = INTERSECTION TURNING MOVEMENT COUNT LOCATION

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Figure 1

### Site Location

Traffic Impact Assessment, Lofts at 25 Canal Street, Allenstown, New Hampshire

## **EXISTING CONDITIONS**

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### **ROADWAYS**

**Main Street** functions as a two-lane major collector roadway according to the NHDOT, and it extends in a general north-south direction between Turnpike Street to the north, to the Ferry Street/School Street intersection, where it continues as South Main Street. In the study area, Main Street provides access to many residences, institutional uses (schools, library), several businesses, and numerous intersecting streets and driveways. The horizontal alignment of Main Street is curvilinear and the vertical profile follows a rolling terrain. In the study area, the pavement is delineated with a four-inch double yellow centerline (passing maneuvers prohibited) and four-inch white edge lines. The posted speed limit on Main Street is 25 mph.

**Canal Street** functions as a two-lane collector roadway that extends in a general west-east direction between Ferry Street to the west and Main Street to the east. In the study area, Canal Street provides access to several residences, Reynolds Avenue, the 25 Canal Street redevelopment site, and the Allenstown Sewage Treatment Plant. The pavement width narrows on the section between Ferry Street and the subject site. The horizontal alignment of Canal Street includes straight tangent sections as well as several curves. The vertical profile follows a slight down grade in westerly direction between Main Street and the subject site. There are no pavement markings on Canal Street and the speed limit is posted at 25 mph.

**Ferry Street** functions as two-lane collector roadway with no outlet that extends in a general west-east direction between the Merrimack River to the west and Main Street to the east. In the study area, Ferry Street provides access to many residences, Canal Street, Houle Avenue, Reynolds Avenue, the Suncook Wastewater Treatment Plant and the Allenstown Fire Department. The horizontal alignment is essentially straight and the vertical profile follows a down grade in westerly direction. There are no pavement markings on Ferry Street and the posted speed limit is 25 mph. There is also a "Thru Trucks Prohibited" sign.

**School Street** functions as two-lane collector roadway that extends in a general west-east direction between Main Street to the west and Turnpike Street to the east. In the study area, School Street provides access to many residences, several intersecting side streets and the Armand R. Dupont School. The horizontal alignment is essentially straight and the vertical profile follows a rolling terrain. The pavement is delineated with a four-inch double yellow centerline (passing maneuvers prohibited) and the posted speed limit is 30 mph. There is a sidewalk on the north side of School Street

### **INTERSECTIONS**

The **Main Street/Ferry Street/School Street** intersection functions an offset four-leg intersection with stop sign control on the minor approaches. The eastbound approach intersects Main Street approximately 40-feet north of the westbound approach. The existing travel lane configuration at this intersection is as follows:

- Main Street (NB) Approach: One shared left-through-right lane
- Main Street (SB) Approach: One shared left-through-right lane
- Ferry Street (EB) Approach: One shared left-through-right lane
- School Street (WB) Approach: One shared left-through-right lane



Pedestrian crosswalks are present on both minor approaches and across Main Street. An overhead emergency signal system with span wires provides signal heads for each of the four approaches to this intersection. This signal system is activated by the adjacent fire station on an as-needed basis.

The **Main Street/Canal Street** intersection functions as standard three-leg T-intersection with stop sign control on the minor approach. The existing travel lane configuration at this intersection is as follows:

- Main Street (SB) Approach: One shared through-right lane
- Main Street (NB) Approach: One shared left-through lane
- Canal Street (EB) Approach: One shared left-right lane

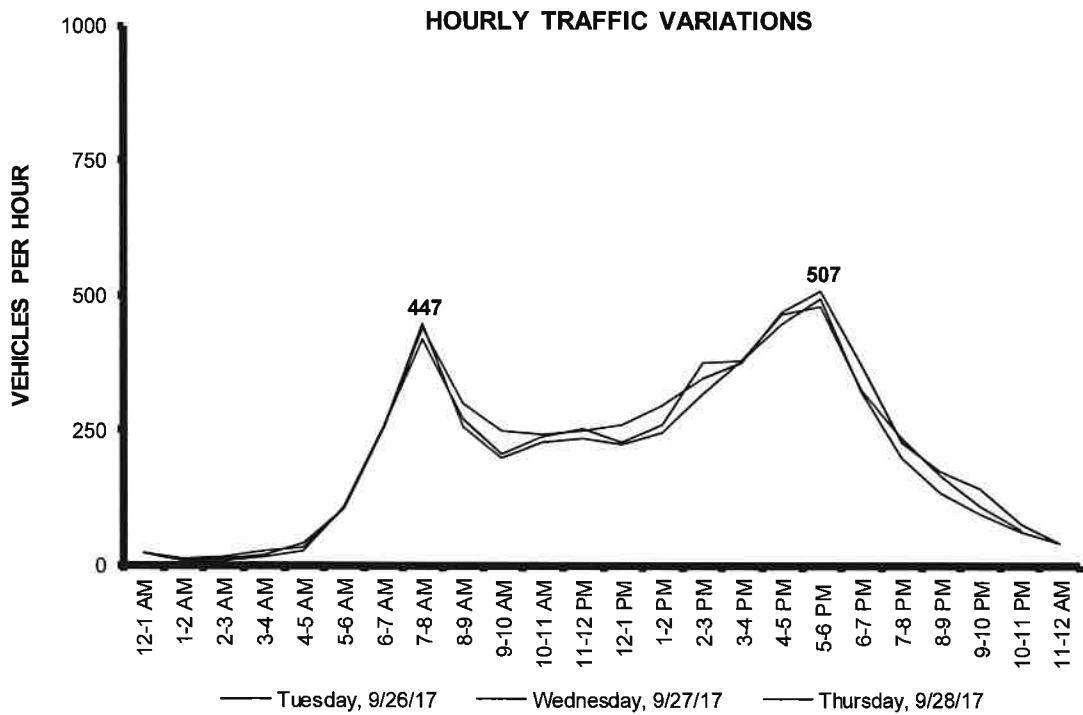
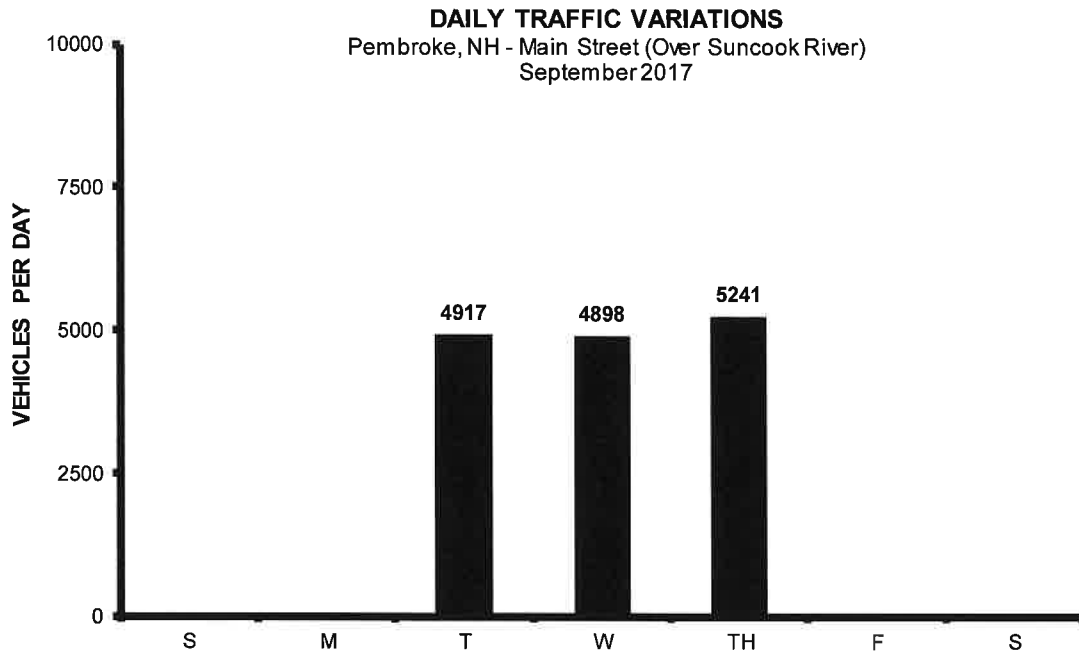
## TRAFFIC VOLUMES

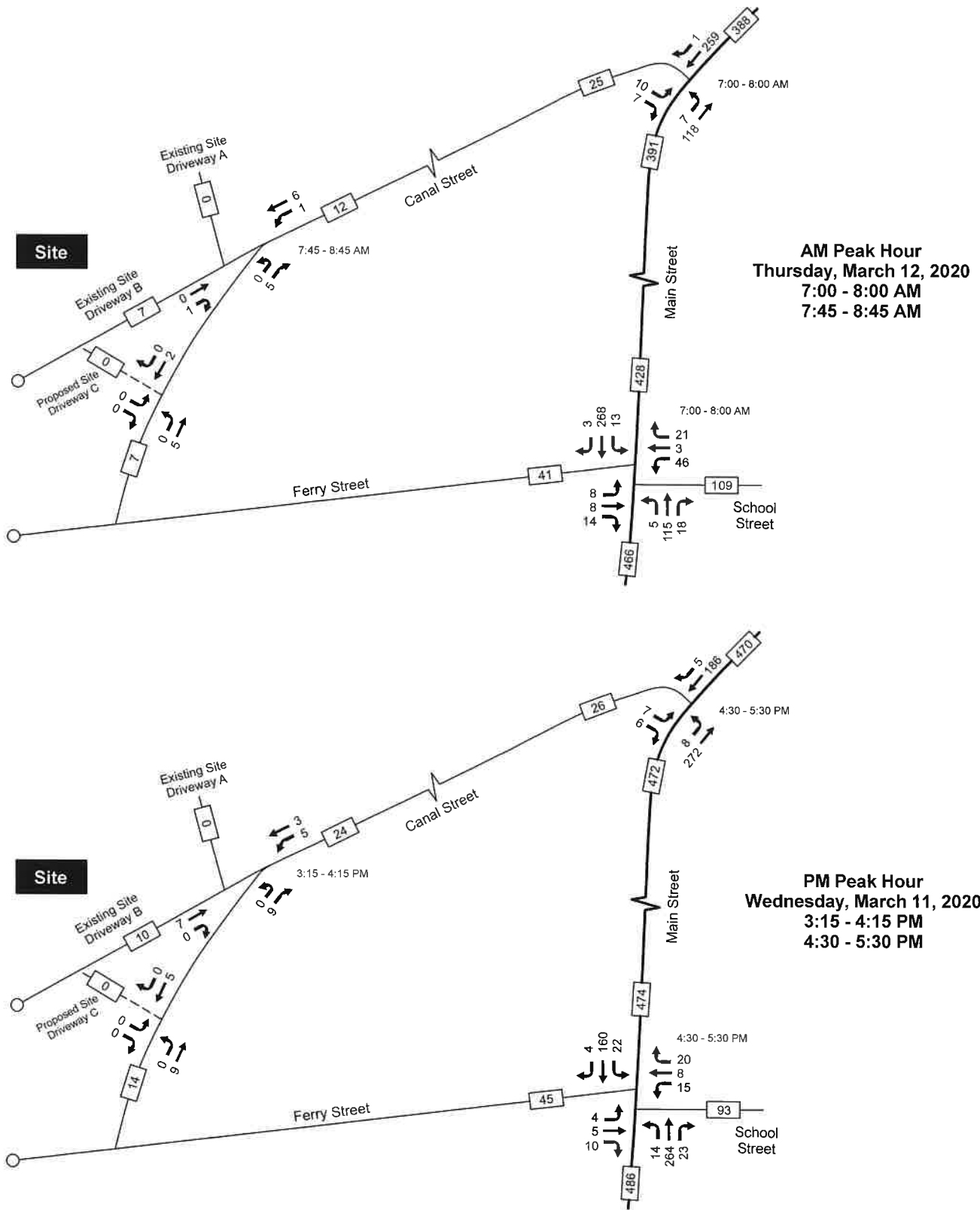
Research at the New Hampshire Department of Transportation (NHDOT) revealed that a short-term automatic traffic recorder (ATR) count was conducted on Main Street (over Suncook River) in September 2017. This count station is located approximately 200-feet north of the Main Street/Canal Street intersection and the data confirmed that the rate of traffic flow typically reached peak levels during the typical weekday AM and PM commuter periods. The daily and hourly variations in traffic demand at this location are summarized graphically on Page 6. Appendix B contains the summary and detail sheets pertaining to this count station.

To supplement this data, Pernaw & Company, Inc. conducted intersection turning movement and vehicle classification counts in March 2020 at the three existing study area intersections on Main Street and at the Canal Street/Existing Site Driveway intersection. These counts were conducted simultaneously on Thursday, March 12, 2020 from 7:00 to 9:00 AM and on Wednesday, March 11, 2020 from 2:00 to 6:00 PM, prior to the COVID-19 shutdown. The new 2020 count data for the study area is summarized on Figure 2. Several facts and conclusions are evident from this data.

- The highest hourly traffic volumes in the study area occurred from 7:00 to 8:00 AM or 7:45 to 8:45 AM and from 3:15 to 4:15 PM or 4:30 to 5:30 PM, depending upon location. The traffic volumes during the PM peak hour were generally higher than those that occurred during the AM peak hour, except on School Street where the higher volume occurred during the AM peak hour, as a result of the nearby school.
- Main Street traffic volumes range from 388 to 466 vehicles per hour (vph) during the AM peak hour depending upon location, and from 470 to 486 vph during the PM peak hour. The higher directional flow was southbound during the AM peak hour and northbound during the PM peak hour.
- The traffic volume on Canal Street (west of Main Street) totaled 25 (AM) and 26 (PM) vehicles during the peak hour periods. The majority was traveling eastbound during the AM peak hour and it was evenly split between eastbound and westbound during the PM peak hour.
- The traffic volume on Ferry Street (west of Main Street) totaled 41 (AM) and 45 (PM) vehicles during the peak hour periods. The majority was traveling eastbound during the AM peak hour and westbound during the PM peak hour.
- The traffic volume on School Street (east of Main Street) totaled 109 (AM) and 93 (PM) vehicles during the peak hour periods. The majority was traveling eastbound during the AM peak hour and westbound during the PM peak hour.
- The existing site driveway accommodated 7 (AM) and 10 (PM) vehicles during the peak hour periods due to the existing uses on the subject site.
- Canal Street (south of existing site driveway) carried 7 (AM) and 14 (PM) vehicles during the peak hour periods. Over the course of the six-hour count period, a total of 20 trucks were observed on this section of Canal Street, presumably due to the wastewater treatment plant.

Appendix C contains detail sheets pertaining to all of the raw turning movement count data.





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Figure 2

2020 Existing Traffic Volumes

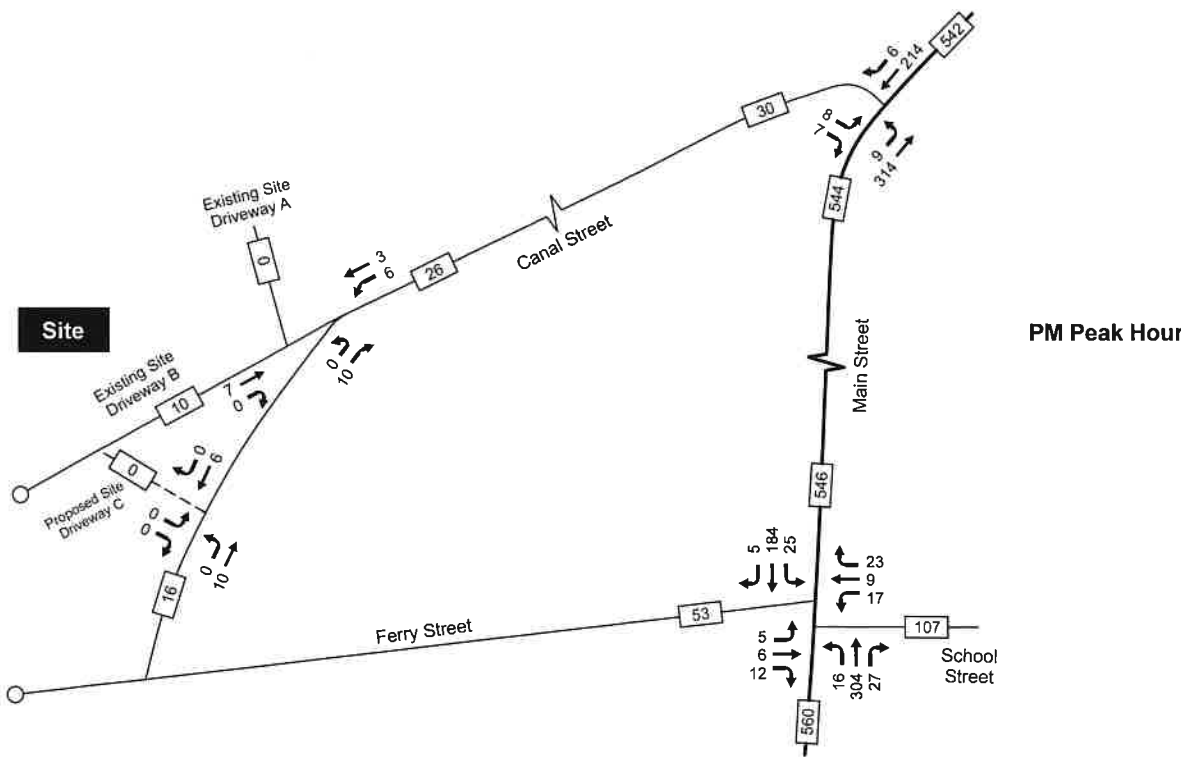
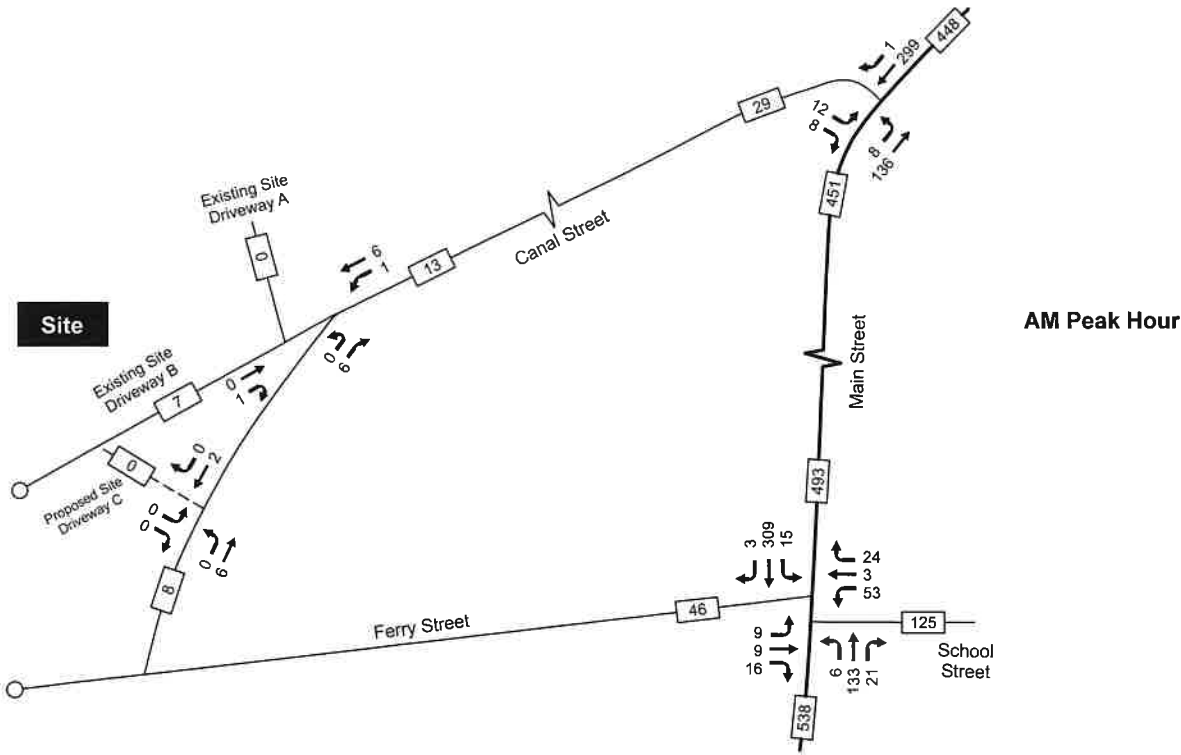
Traffic Impact Assessment, Lofts at 25 Canal Street, Allentown, New Hampshire

**NO-BUILD TRAFFIC VOLUMES**

The No-Build traffic projections (without the proposed apartments) for 2021 and 2031 are summarized on Figure 3 and Figure 4, respectively. These projections are based on the March 2020 traffic count data, a two-percent annual background traffic growth rate (compounded annually) to account for normal background traffic growth, and a seasonal adjustment factor of 1.13 to reflect peak-month conditions. There are no known development projects that have been recently approved that would affect the traffic volumes in the study area.

The future traffic projections contained herein are intended to reflect worst-case, peak-month, peak-hour conditions. The calculations pertaining to the derivation of the annual background traffic growth rate and the seasonal adjustment factors are contained in Appendix D.

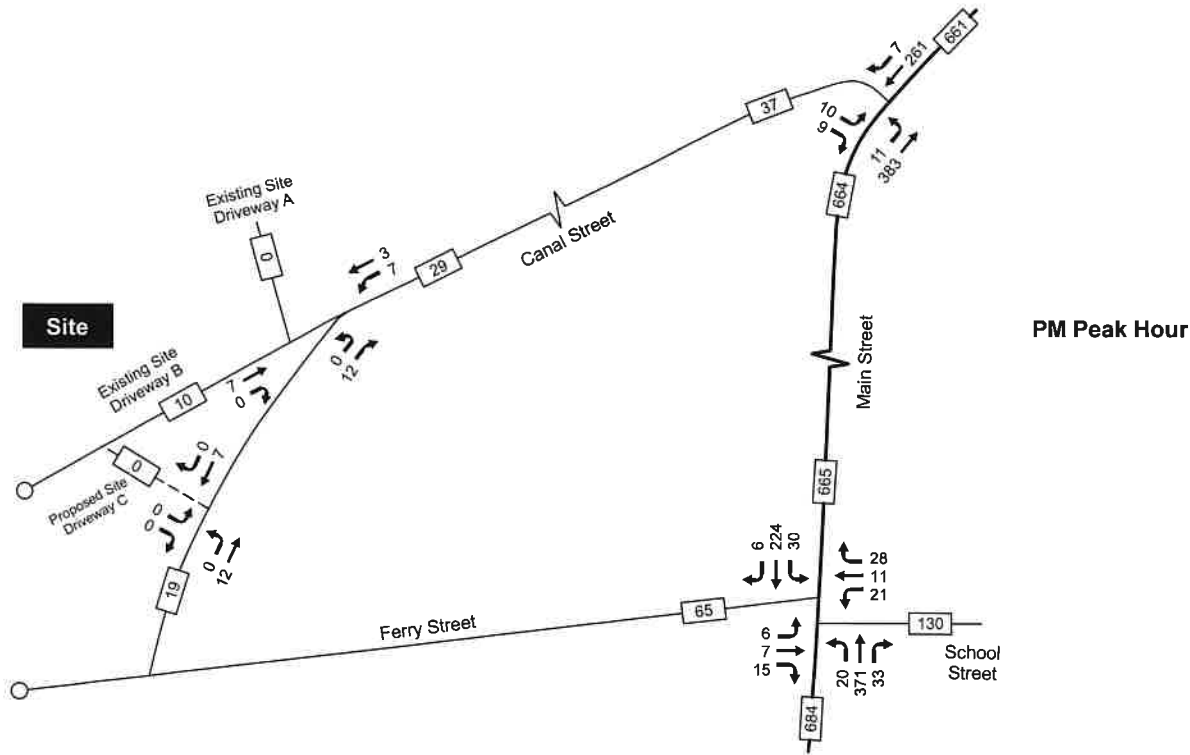
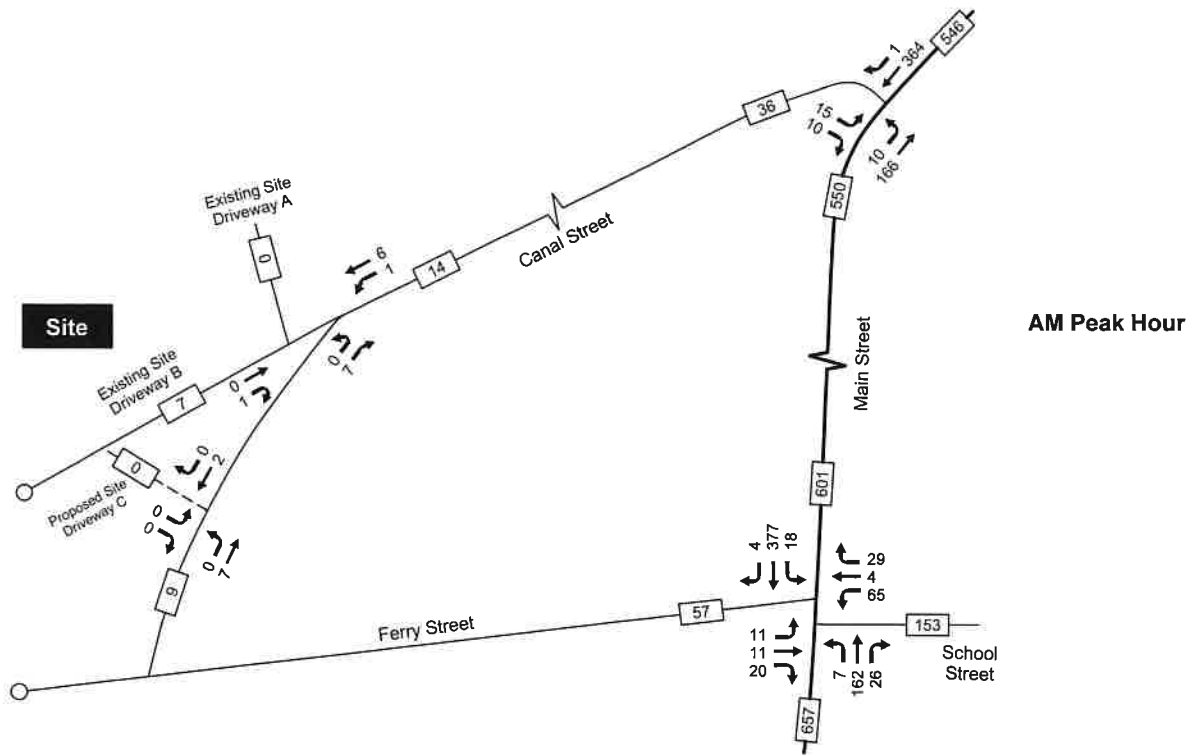




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**Figure 3** **2021 No-Build Traffic Volumes**  
*Traffic Impact Assessment, Lofts at 25 Canal Street, Allentown, New Hampshire*



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Figure 4

2031 No-Build Traffic Volumes

Traffic Impact Assessment, Lofts at 25 Canal Street, Allenstown, New Hampshire

## SITE GENERATED TRAFFIC

To estimate the quantity of vehicle-trips that will be produced by the proposed apartment complex and removal of the industrial tenant, Pernaw & Company, Inc. considered the standardized trip-generation rates and equations published by the Institute of Transportation Engineers (ITE)<sup>1</sup>. Based upon ITE Land Use Code 221 (Multifamily Housing-Mid-Rise) the proposed apartments are expected to generate approximately 54 vehicle-trips (14 arrivals, 40 departures) during the weekday AM peak hour, and 66 vehicle-trips (40 arrivals, 26 departures) during the weekday PM peak hour, on an average weekday basis. These results are based upon the number of dwelling units as the independent variable. The trips associated with the former industrial tenant were based on Land Use Code 110 and the number of employees. The following table summarizes the anticipated trip-generating characteristics of the proposed redevelopment project.

		Trip Generation Summary			
		Existing Site <sup>1</sup>	Less Industrial Tenant <sup>2</sup>	Apartments <sup>3</sup> (150 Units)	Total
AM Peak Hour					
	Entering	6 veh	-5 veh	14 veh	15 trips
	Exiting	<u>1 veh</u>	<u>-1 veh</u>	<u>40 veh</u>	<u>40 trips</u>
	Total	7 trips	-6 trips	54 trips	55 trips
PM Peak Hour					
	Entering	3 veh	-1 veh	40 veh	42 trips
	Exiting	<u>7 veh</u>	<u>-5 veh</u>	<u>26 veh</u>	<u>28 trips</u>
	Total	10 trips	-6 trips	66 trips	70 trips
Weekday (24 Hour)					
	Entering	25 veh	-19 veh	408 veh	414 trips
	Exiting	<u>25 veh</u>	<u>-19 veh</u>	<u>408 veh</u>	<u>414 trips</u>
	Total	50 trips	-38 trips	816 trips	828 trips

<sup>1</sup> Intersection Turning Movement Counts conducted on 3/11 & 3/12/2020

<sup>2</sup> ITE Land Use Code 110 - General Light Industrial - Rate method (12 Employees)

<sup>3</sup> ITE Land Use Code 221 - Multifamily Housing (Mid-Rise) - Rate Method

All vehicle-trips associated with the proposed apartments will be “primary” type trips, or new trips to the area. Appendix E contains the trip generation computations for the proposed redevelopment project, along with diagrams that summarize the distribution of the residential and industrial tenant trips at the various study area intersections.

<sup>1</sup> Institute of Transportation Engineers, *Trip Generation Manual*, tenth edition (Washington, D.C., 2017). 2003A

## **BUILD PROJECTIONS**

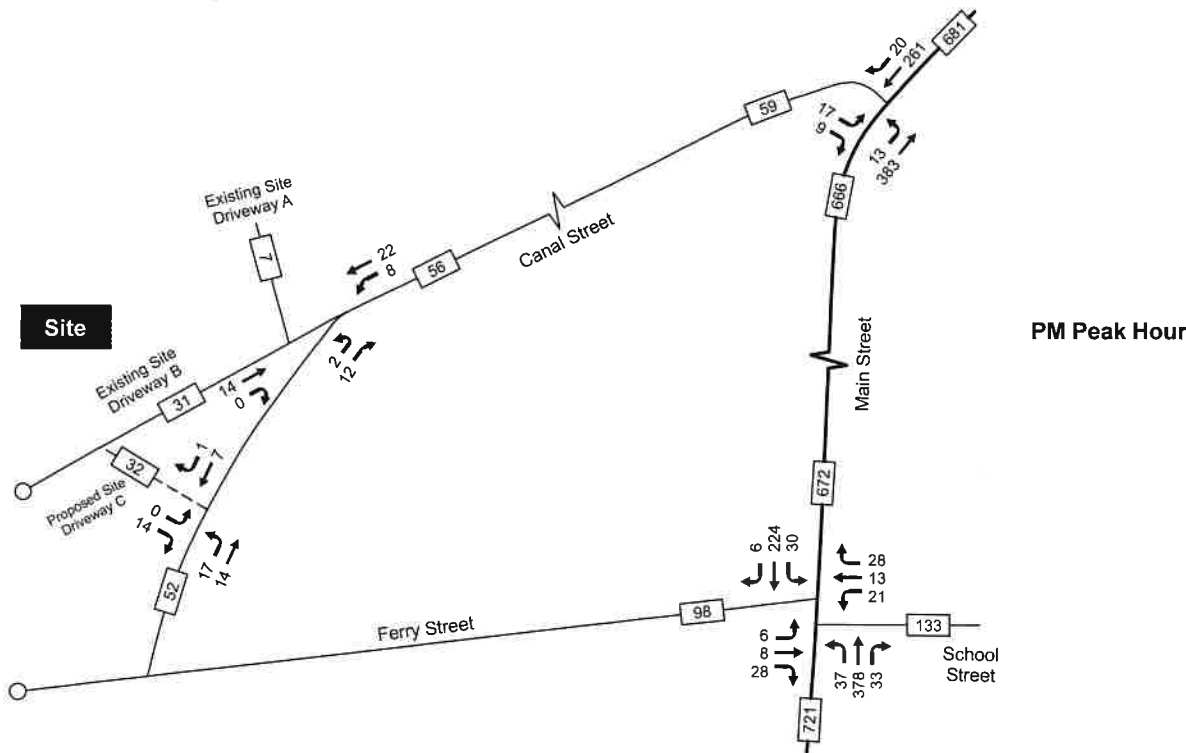
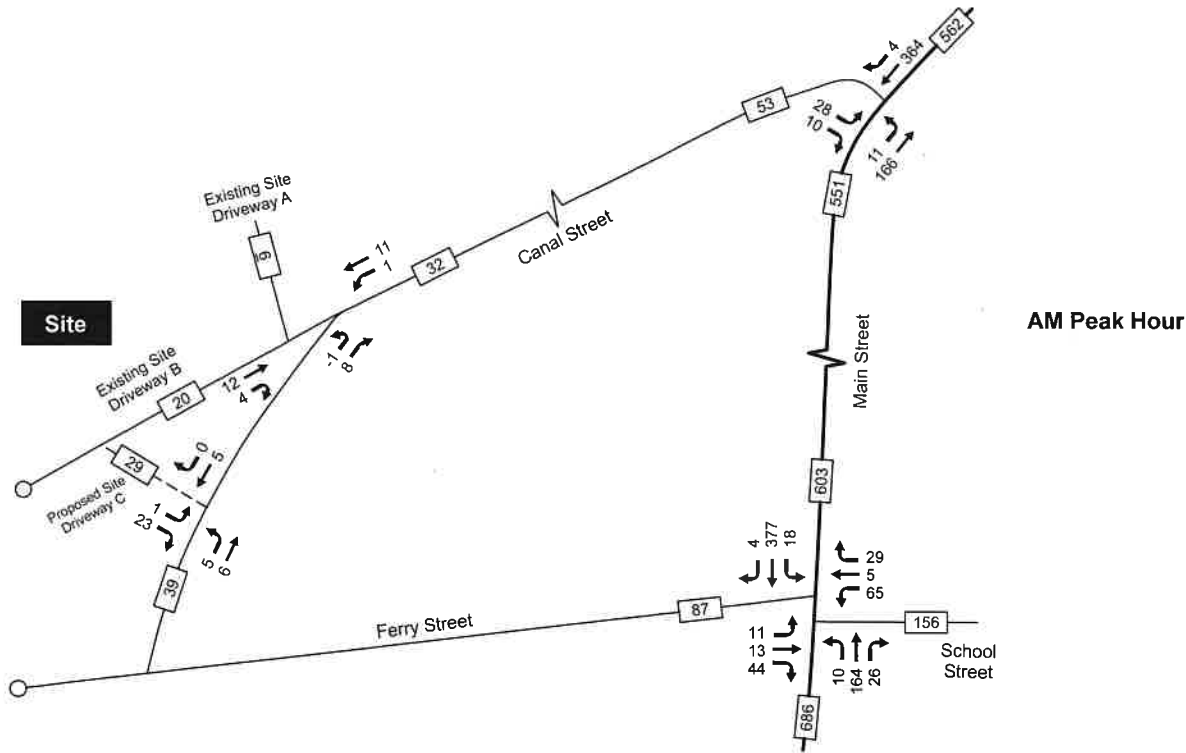
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The Build traffic projections with the proposed apartment complex fully occupied are summarized on Figure 5 (2021) and Figure 6 (2031). These projections are based on the No-Build traffic volumes, the trip generation estimates in Table 1 and the expectation that the primary trips will be distributed in the following manner:

Main Street - North	33%
Main Street - South	62%
School Street - East	<u>5%</u>
	100%

These trip distribution percentages were based on “journey to work” data from the latest census as well as our familiarity of the study area.





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**Figure 6** 2031 Build Traffic Volumes  
 Traffic Impact Assessment, Lofts at 25 Canal Street, Allenstown, New Hampshire



## **IMPACT SUMMARY**

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### **TRAFFIC VOLUME INCREASES**

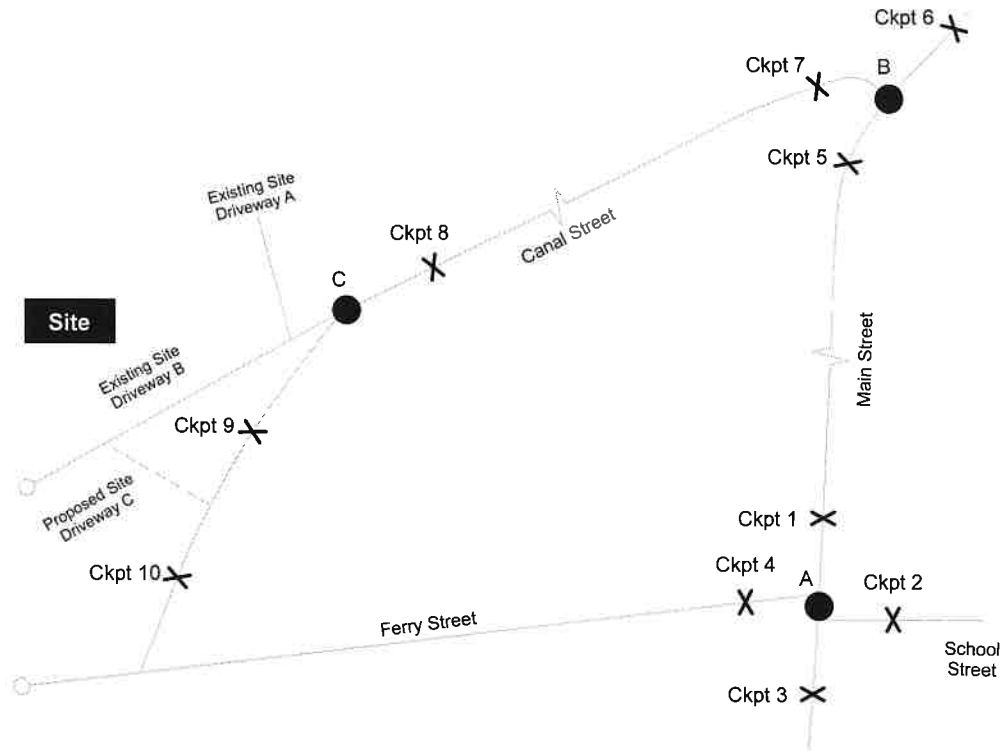
The net impact that the proposed redevelopment project will have on area roadway and intersection traffic volumes can be estimated by comparing the No-Build traffic projections with the Build projections. A comparison for the two peak hour cases is summarized on Figure 7.

In terms of roadway segments, this analysis shows that the greatest impact will occur during the PM peak hour period on the section of Main Street, south of School Street. The traffic volume on this roadway segment is projected to increase +7% (from 560 to 597 or +37 vehicles) during the worst-case PM peak hour period. The increase on Main Street north of Canal Street is projected to increase +4% (from 542 to 562 or +20 vehicles) during the PM peak hour. Similarly, the traffic volume on Canal Street east of the existing site driveways is expected to increase by +27 vehicles during the PM peak hour.

In terms of intersection volumes (total vehicles entering) the Main Street/Ferry Street/School Street intersection is expected to accommodate the largest increase: +40 additional vehicles during the PM peak hour period. This translates into less than one additional vehicle every minute on average, during this hour. The net increases during the AM peak hour will be slightly lower than during the PM peak hour.

### **REGIONAL TRIP DISTRIBUTION**

At the request of town officials, the distribution of site traffic was expanded to include the town of Pembroke. Figure 8 shows that the proposed apartments will increase the traffic volume on US3 from +22 vehicles (north of Broadway) to +12 vehicles (north of NH106) during the PM peak hour. Smaller increases are anticipated during the AM peak hour period. Increases of this order of magnitude will not significantly alter the prevailing traffic operations at any intersections along the US3 corridor in Pembroke.

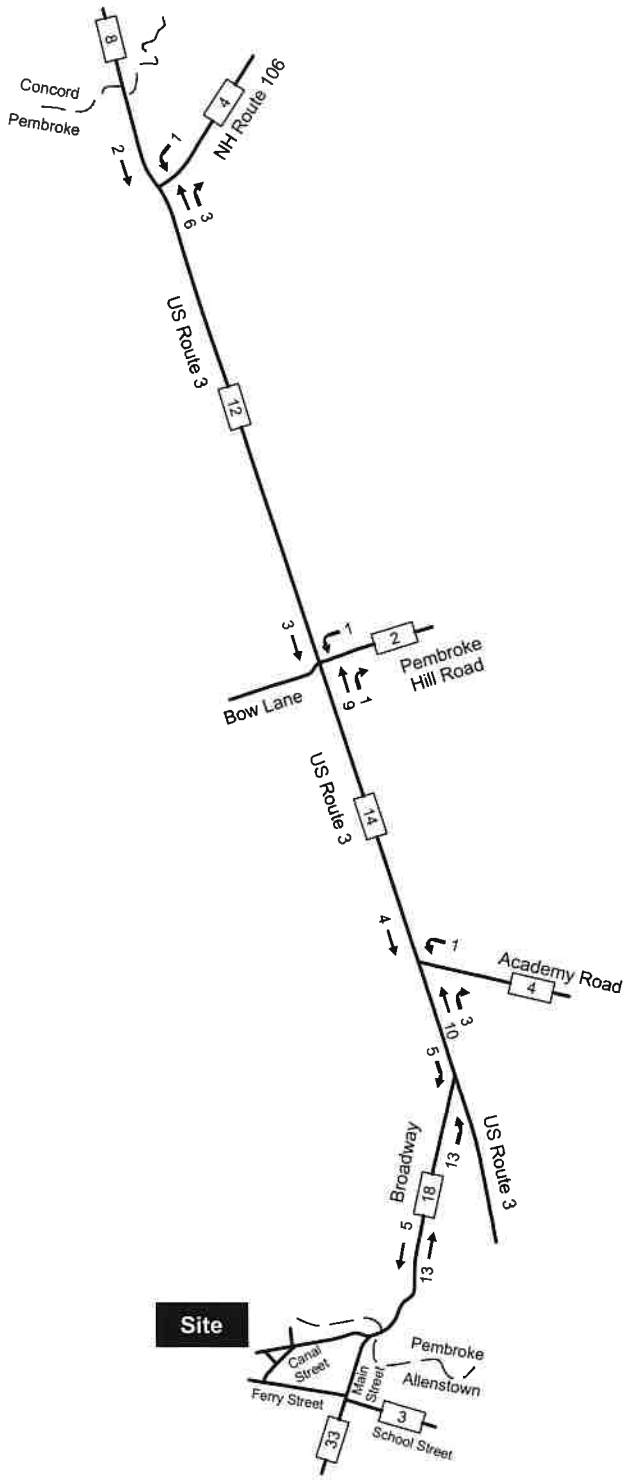


AM Peak Hour					PM Peak Hour				
Location	2021 No-Build	2021 Build	Change	% Change	Location	2021 No-Build	2021 Build	Change	% Change
Intersection A	601	633	+32 veh	5%	Intersection A	633	673	+40 veh	6%
Intersection B	464	481	+17 veh	4%	Intersection B	558	580	+22 veh	4%
Intersection C	14	34	+20 veh	143%	Intersection C	26	55	+29 veh	112%
Checkpoint 1	493	495	+2 veh	<1%	Checkpoint 1	546	553	+7 veh	1%
Checkpoint 2	125	128	+3 veh	2%	Checkpoint 2	107	110	+3 veh	3%
Checkpoint 3	538	567	+29 veh	5%	Checkpoint 3	560	597	+37 veh	7%
Checkpoint 4	46	76	+30 veh	65%	Checkpoint 4	53	86	+33 veh	62%
Checkpoint 5	451	452	+1 veh	<1%	Checkpoint 5	544	546	+2 veh	<1%
Checkpoint 6	448	464	+16 veh	4%	Checkpoint 6	542	562	+20 veh	4%
Checkpoint 7	29	46	+17 veh	59%	Checkpoint 7	30	52	+22 veh	73%
Checkpoint 8	13	31	+18 veh	138%	Checkpoint 8	26	53	+27 veh	104%
Checkpoint 9	8	11	+3 veh	38%	Checkpoint 9	16	19	+3 veh	19%
Checkpoint 10	8	38	+30 veh	375%	Checkpoint 10	16	49	+33 veh	206%

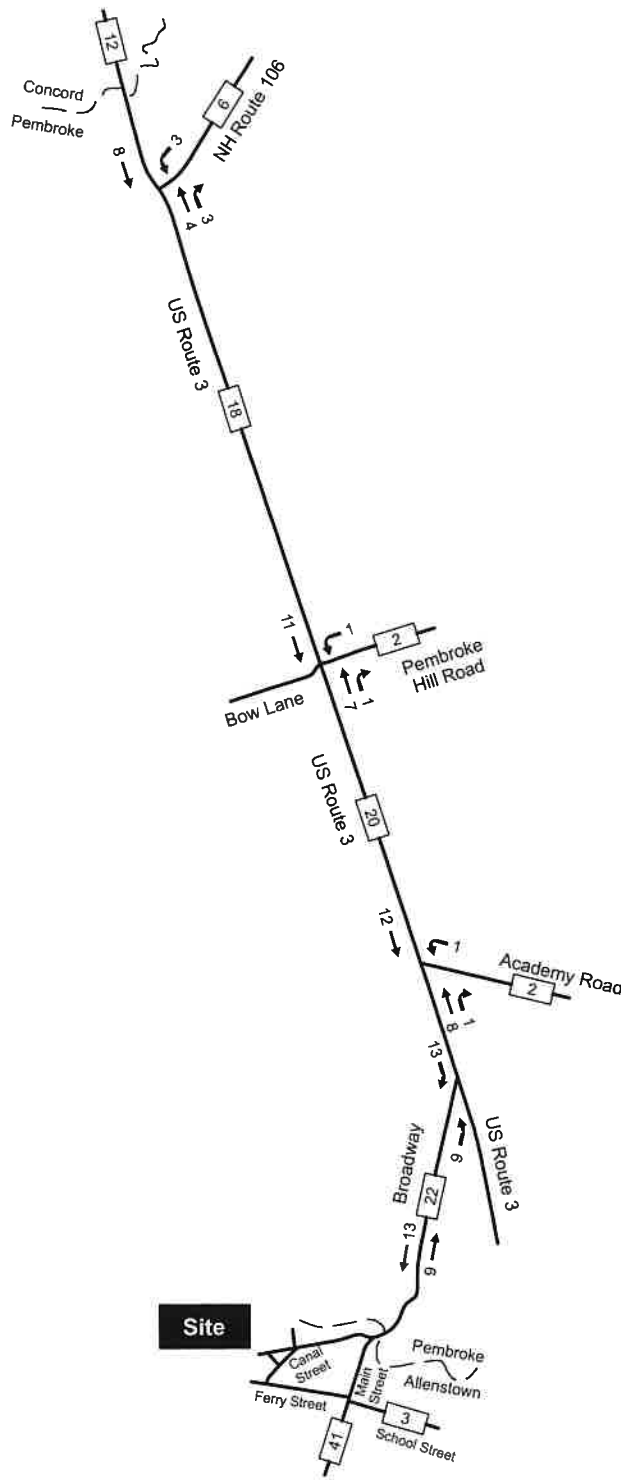
Figure 7

2021 Impact Summary

Traffic Impact Assessment, Lofts at 25 Canal Street, Allentown, New Hampshire



AM Peak Hour



AM Peak Hour



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Figure 8

Regional Trip Distribution Patterns - 150 Apartments

Traffic Impact Assessment, Proposed Redevelopment of 25 Canal Street, Allenstown, New Hampshire

**TRAFFIC OPERATIONS AND SAFETY**

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**INTERSECTION CAPACITY – UNSIGNALIZED INTERSECTIONS**

The short-range (2021) and long-range (2031) traffic projections form the basis for assessing traffic operations at the study area intersections from a capacity and delay standpoint. These intersections were analyzed according to the methodologies of the *Highway Capacity Manual 2010*<sup>2</sup> as replicated by the latest edition of the *Synchro Signal Timing Software (Version 10)*, which is capable of analyzing unsignalized intersections as well.

Capacity and Level of Service (LOS) calculations pertaining to unsignalized intersections address the quality of service for those vehicles turning into and out of the intersecting side street or driveway. The availability of adequate gaps in the traffic stream on the major street actually controls the potential capacity for vehicle movements to and from the minor approaches. Levels of Service are simply letter grades (A-F) which categorize the vehicle delays associated with specific turning maneuvers. The following table describes the criteria used in this analysis.

Table 2	Level-of-Service Criteria for Unsignalized Intersections
Level of Service	Control Delay seconds/vehicle
A	0 - 10
B	> 10 - 15
C	> 15 - 25
D	> 25 - 35
E	> 35 - 50
F	> 50

Source: Transportation Research Board, *Highway Capacity Manual 2010*.

Appendix F contains the computations pertaining to the unsignalized intersection capacity and Level of Service analyses.

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<sup>2</sup> Transportation Research Board, *Highway Capacity Manual* (Washington, D.C., 2010). 2003A

**Main Street/South Main Street/Ferry Street/School Street** – The analysis of this intersection is summarized on Table 3 and indicates that all applicable movements will operate well below capacity and at LOS C or higher during all hours of the day through 2031, with the proposed apartment complex fully occupied. The left-turn arrival movement from Main Street on to Ferry Street or School Street will operate at LOS A during all hours of the day through the horizon year and beyond. In the one instance where the LOS changes from LOS B to LOS C as a result of site traffic, it is due to a borderline LOS B-C situation where the anticipated delay increases minimally from 14.1 to 15.2 seconds.

Table 3	STOP-Controlled Intersection Capacity Analysis Main Street / South Main Street / Ferry Street / School Street							
	Weekday AM Peak Hour				Weekday PM Peak Hour			
	Delay <sup>1</sup>	V/C <sup>2</sup>	LOS <sup>3</sup>	Queue <sup>4</sup>	Delay <sup>1</sup>	V/C <sup>2</sup>	LOS <sup>3</sup>	Queue <sup>4</sup>
South Main Street - NB Left Turns								
2020 Existing	8.1	0.01	A	<1	7.6	0.01	A	<1
2021 No Build	8.3	0.01	A	<1	7.6	0.01	A	<1
2021 Build	8.3	0.01	A	<1	7.7	0.03	A	<1
2031 No Build	8.5	0.01	A	<1	7.7	0.02	A	<1
2031 Build	8.4	0.01	A	<1	7.8	0.03	A	<1
Ferry Street - EB LT Departures								
2020 Existing	12.1	0.08	B	<1	11.7	0.06	B	<1
2021 No Build	13.0	0.10	B	<1	12.7	0.08	B	<1
2021 Build	12.8	0.16	B	1	12.3	0.11	B	<1
2031 No Build	15.0	0.15	B	1	14.4	0.11	B	<1
2031 Build	14.0	0.20	B	1	14.1	0.15	B	1
School Street - WB LT Departures								
2020 Existing	14.2	0.27	B	1	12.8	0.10	B	<1
2021 No Build	16.4	0.34	C	2	14.1	0.13	B	<1
2021 Build	18.1	0.38	C	2	15.2	0.15	C	1
2031 No Build	23.5	0.51	C	3	17.0	0.19	C	1
2031 Build	24.5	0.53	C	3	18.8	0.22	C	1
Main Street - SB Left Turns								
2020 Existing	7.5	0.01	A	<1	8.0	0.02	A	<1
2021 No Build	7.6	0.01	A	<1	8.1	0.02	A	<1
2021 Build	7.6	0.01	A	<1	8.1	0.02	A	<1
2031 No Build	7.6	0.02	A	<1	8.3	0.03	A	<1
2031 Build	7.6	0.02	A	<1	8.4	0.03	A	<1

<sup>1</sup> HCM Control Delay (seconds per vehicle), <sup>2</sup> HCM Volume to Capacity Ratio, <sup>3</sup> HCM Level of Service, <sup>4</sup> HCM 95th Percentile Queue (vehicles)

**Main Street/Canal Street** – The analysis of this intersection is summarized on Table 4 and indicates that all applicable movements will operate well below capacity and at LOS B or higher during all hours of the day through 2031, and beyond with the proposed apartment complex fully occupied. Site traffic is not of sufficient magnitude to alter the prevailing Levels of Service at this intersection.

**Table 4** **STOP-Controlled Intersection Capacity Analysis**  
**Main Street / Canal Street**

	Weekday AM Peak Hour				Weekday PM Peak Hour			
	Delay <sup>1</sup>	V/C <sup>2</sup>	LOS <sup>3</sup>	Queue <sup>4</sup>	Delay <sup>1</sup>	V/C <sup>2</sup>	LOS <sup>3</sup>	Queue <sup>4</sup>
<b>Main Street - NB Left Turns</b>								
2020 Existing	7.9	0.01	A	<1	7.7	0.01	A	<1
2021 No Build	8.0	0.01	A	<1	7.8	0.01	A	<1
2021 Build	8.0	0.01	A	<1	7.8	0.01	A	<1
2031 No Build	8.2	0.01	A	<1	7.9	0.01	A	<1
2031 Build	8.2	0.01	A	<1	7.9	0.01	A	<1
<b>Canal Street - EB LT Departures</b>								
2020 Existing	11.2	0.05	B	<1	11.3	0.04	B	<1
2021 No Build	11.9	0.06	B	<1	12.0	0.05	B	<1
2021 Build	12.6	0.10	B	<1	13.0	0.07	B	<1
2031 No Build	13.2	0.09	B	<1	13.4	0.07	B	<1
2031 Build	14.2	0.14	B	1	14.6	0.10	B	<1

<sup>1</sup> HCM Control Delay (seconds per vehicle), <sup>2</sup> HCM Volume to Capacity Ratio, <sup>3</sup> HCM Level of Service, <sup>4</sup> HCM 95th Percentile Queue (vehicles)



**Canal Street/Site Driveway B  
Canal Street/Proposed Site Driveway C**

The analysis of these intersections is summarized on Table 5 and Table 6, respectively. The results indicate that all applicable movements will operate well below capacity and at LOS A during all hours of the day through 2031, and beyond with the proposed apartment complex fully occupied. This is the highest or best level attainable, and means that vehicle delays and queuing will be minimal. Traffic congestion will not result with a single approach lane on each leg of this intersection.

Table 5	ALL-WAY STOP-Controlled Intersection Capacity Analysis Canal Street / Site Driveway B							
	Weekday AM Peak Hour				Weekday PM Peak Hour			
	Delay <sup>1</sup>	V/C <sup>2</sup>	LOS <sup>3</sup>	Queue <sup>4</sup>	Delay <sup>1</sup>	V/C <sup>2</sup>	LOS <sup>3</sup>	Queue <sup>4</sup>
Canal Street - EB Approach								
2020 Existing	7.3	0.01	A	<1	8.0	0.02	A	<1
2021 No Build	7.3	0.01	A	<1	8.0	0.02	A	<1
2021 Build	7.5	0.01	A	<1	7.2	0.02	A	<1
2031 No Build	7.3	0.01	A	<1	8.0	0.02	A	<1
2031 Build	7.5	0.02	A	<1	7.2	0.02	A	<1
Canal Street - WB Approach								
2020 Existing	8.2	0.02	A	<1	8.6	0.04	A	<1
2021 No Build	8.2	0.02	A	<1	8.7	0.04	A	<1
2021 Build	8.4	0.03	A	<1	9.0	0.13	A	<1
2031 No Build	8.2	0.02	A	<1	8.7	0.05	A	<1
2031 Build	8.4	0.03	A	<1	9.1	0.13	A	1
Site Driveway B - SB Approach								
2020 Existing	6.4	0.00	A	<1	7.5	0.02	A	<1
2021 No Build	6.4	0.00	A	<1	7.5	0.02	A	<1
2021 Build	7.3	0.07	A	<1	7.8	0.04	A	<1
2031 No Build	6.4	0.00	A	<1	7.6	0.02	A	<1
2031 Build	7.3	0.07	A	<1	7.8	0.04	A	<1

<sup>1</sup> HCM Control Delay (seconds per vehicle), <sup>2</sup> HCM Volume to Capacity Ratio, <sup>3</sup> HCM Level of Service, <sup>4</sup> HCM 95th Percentile Queue (vehicles)

**Table 6** **STOP-Controlled Intersection Capacity Analysis**  
**Canal Street / Proposed Site Driveway C**

	Weekday AM Peak Hour				Weekday PM Peak Hour				
	Delay <sup>1</sup>	V/C <sup>2</sup>	LOS <sup>3</sup>	Queue <sup>4</sup>	Delay <sup>1</sup>	V/C <sup>2</sup>	LOS <sup>3</sup>	Queue <sup>4</sup>	
Canal Street - NB Left Turns									
2021 Build	7.2	0.01	A	<1	7.3	0.01	A	<1	
2031 Build	7.2	0.01	A	<1	7.3	0.01	A	<1	
Site Driveway C - EB LT Departures									
2021 Build	8.4	0.03	A	<1	8.4	0.02	A	<1	
2031 Build	8.4	0.03	A	<1	8.5	0.02	A	<1	

<sup>1</sup> HCM Control Delay (seconds per vehicle), <sup>2</sup> HCM Volume to Capacity Ratio, <sup>3</sup> HCM Level of Service, <sup>4</sup> HCM 95th Percentile Queue (vehicles)

**AUXILIARY TURN LANE WARRANTS ANALYSIS**

**Left-Turn Treatment** – The type of treatment needed to accommodate a left-turning vehicle from any street or highway to an intersecting side street can range from no treatment, where turning volumes are low; to the provision of a bypass lane for through traffic to travel around left-turning vehicles; to the addition of a formal center turn lane used exclusively by left-turning vehicles for deceleration and storage while waiting to complete their maneuvers.

Analysis of the two proposed site driveway intersections along Canal Street using NCHRP 457 guidelines is summarized on Table 7 and it indicates that left-turn treatment is not warranted on Canal Street at either intersection. This finding is due in part to the low number of vehicles turning left into the site driveways and the relatively low traffic volumes found on Canal Street during the peak hour periods.

**Table 7** **Left-Turn Lane Warrants Analysis**  
**Canal Street / Site Driveways**

	Driveway B		Driveway C	
	2031 AM Build Volumes	2031 PM Build Volumes	2031 AM Build Volumes	2031 PM Build Volumes
<b>Peak Hour Inputs</b>				
Left-Turn Volume	0 (NBL)	2 (NBL)	5 (NBL)	17 (NBL)
Advancing Volume	7 (NB)	14 (NB)	11 (NB)	31 (NB)
Opposing Volume	12 (SB)	30 (SB)	5 (SB)	8 (SB)
Percent Lefts	0.0%	14.3%	45.5%	54.8%
Speed (mph)	25	25	25	25
Limiting Advancing Volume (veh/h)	>1000	562	408	406
<b>Conclusion</b>				
Left-Turn Treatment Warranted	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>

**Right-Turn Treatment** – At unsignalized intersections, the type of treatment needed to accommodate right-turning vehicles from any street or highway to any intersecting side street can range from radius only, where turning volumes are low; to the provision of a short 10:1 taper; to the addition of an exclusive right-turn lane, where turning volumes and through traffic volumes are significant. Analysis of the two proposed site driveway intersections along Canal Street using NCHRP 457 guidelines is summarized on Table 8 and it confirms that right-turn treatment on Canal Street is not warranted at these two intersections.

Table 8	Right-Turn Lane Warrants Analysis Canal Street / Site Driveways			
	Driveway B		Driveway C	
	2031 AM Build Volumes	2031 PM Build Volumes	2031 AM Build Volumes	2031 PM Build Volumes
<b>Peak Hour Inputs</b>				
Right-Turn Volume	11 (SB)	22 (SB)	0 (SB)	1 (SB)
Total Approach Volume	12 (SB)	30 (SB)	5 (SB)	8 (SB)
Speed (mph)	25	25	25	25
Limiting Right-Turn Volume (veh/h)	>1000	>1000	>1000	>1000
<b>Conclusion</b>				
Add Right-Turn Bay	NO	NO	NO	NO

**Minor-Road Approach Analysis** – The type of treatment needed to accommodate exiting vehicles from the minor-road approach at a stop-controlled intersection can range from a single lane (shared left-right lane) in low-volume conditions, to two exit lanes (exclusive left-turn lane and exclusive right-turn lane) where turning volumes and through traffic volumes are significant, to multiple exit lanes in extreme cases. Analysis of the three site driveways using NCHRP 457 guidelines confirmed that one shared lane is sufficient for the anticipated traffic volumes. The results of these analyses are summarized on Table 9.

Table 9	Minor-Road Approach Geometry Canal Street / Site Driveways			
	Driveway B		Driveway C	
	2031 AM Build Volumes	2031 PM Build Volumes	2031 AM Build Volumes	2031 PM Build Volumes
<b>Peak Hour Inputs</b>				
Major-Road Volume	19 (NB-SB)	44 (NB-SB)	16 (NB-SB)	39 (NB-SB)
% Right-Turns on Minor	25 (EB)	0 (EB)	96 (EB)	100 (EB)
Minor-Road Approach Volume	16	14	24	14
Limiting Minor-Road Volume (veh/h)	539	477	740	745
<b>Conclusion</b>				
Consider TWO Approach Lanes	NO	NO	NO	NO

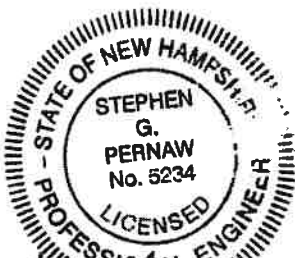
Appendix G contains all of the auxiliary turn lane warrants analyses.

## STUDY FINDINGS AND RECOMMENDATIONS

Based upon the existing conditions data collected at the four existing study area intersections, the anticipated traffic increases from the proposed redevelopment project, and the analysis of future traffic levels in the study area, Pernaw & Company, Inc. concludes that:

1. The recent traffic count data collected in March 2020 revealed that the highest traffic periods on Main Street occurred from 7:00 to 8:00 AM on Thursday, March 12, 2020 and from 4:30 to 5:30 on Wednesday, March 11, 2020. The traffic flow on Main Street (north of Canal Street) totaled 388 vehicles (AM) and 470 vehicles (PM) during the peak hour periods. The heavier directional flow was southbound during the AM peak hour (67%) and northbound during the PM peak hour (59%) period.
2. Canal Street (east of the subject site) carried 12 (AM) and 24 (PM) vehicles during the peak hour periods. Similarly, Ferry Street accommodated 41 (AM) and 45 (PM) vehicles and School Street accommodated 109 (AM) and 93 (PM) vehicles. Analysis of the travel patterns at the two intersections on Main Street revealed that the majority of the residents travel to/from points south.
3. The trip generation analysis indicates that, on an average weekday basis, the 150 proposed apartments will generate approximately 54 vehicle-trips during the weekday AM peak hour; and 66 vehicle-trips during the weekday PM peak hour. Most trips will be outbound during the AM peak, and inbound during the PM peak hour.
4. The trip distribution analysis indicates that approximately 62% of the apartment traffic will travel to/from the south via Main Street. Approximately 33% of the residents are expected to travel to/from points north via Main Street and the remaining 5% via School Street (to the east).
5. The analysis of the four study area intersections indicates that all movements will operate well below capacity and at LOS C or better during the AM and PM peak hours through the 2031 horizon year, with the proposed apartment complex fully occupied. This means that there will be minimal delays and queuing during the peak hour periods, and traffic congestion will not result at these intersections.
6. The 2031 Build traffic volumes do not satisfy the NCHRP 457 guidelines for left-turn treatment or right-turn treatment at the proposed site driveways on Canal Street. Each site driveway intersection will function adequately with one shared lane on each approach to Canal Street.

The appropriate traffic control devices at the two site driveway approaches to Canal Street should include the installation of: 1) a stop sign (MUTCD #R1-1) on the minor approach, 2) an 18-inch white stop line, and 3) a short section of four-inch double-yellow centerline pavement markings to separate ingress and egress vehicles.



*Stephen G. Pernaw* 4/17/20

## **APPENDIX**

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<b>Appendix A</b>	<b>Preliminary Site Plan</b>
<b>Appendix B</b>	<b>Automatic Traffic Recorder Counts</b>
<b>Appendix C</b>	<b>Intersection Turning Movement Counts</b>
<b>Appendix D</b>	<b>Seasonal Adjustment Factor / Historical Growth Rate</b>
<b>Appendix E</b>	<b>Site Generated Traffic Volumes / Trip Distribution</b>
<b>Appendix F</b>	<b>Capacity and Level of Service Calculations – Unsignalized</b>
<b>Appendix G</b>	<b>Auxiliary Turn Lane Warrants Analysis</b>

**Appendix A**

**Preliminary Site Plans**





**Appendix B**

**Automatic Traffic Recorder Counts**



Transportation Data Management System



Excel Version

Weekly Volume Report			
Location ID:	82361066	Type:	SPOT
Located On:	Main St	:	
Direction:	2-WAY		
Community:	PEMBROKE	Period:	Mon 9/25/2017 - Sun 10/1/2017
AADT:	4478		

Start Time	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Avg	Graph
12:00 AM		25	22	23				23	0.5%
1:00 AM		14	8	14				12	0.2%
2:00 AM		16	9	13				13	0.3%
3:00 AM		27	17	19				21	0.4%
4:00 AM		33	27	40				33	0.7%
5:00 AM		107	111	107				108	2.2%
6:00 AM		259	259	258				259	5.2%
7:00 AM		420	447	439				435	8.7%
8:00 AM		272	257	302				277	5.5%
9:00 AM		208	201	249				219	4.4%
10:00 AM		238	229	241				236	4.7%
11:00 AM		253	235	250				246	4.9%
12:00 PM		229	226	262				239	4.8%
1:00 PM		262	247	295				268	5.3%
2:00 PM		375	319	346				347	6.9%
3:00 PM		381	379	375				378	7.5%
4:00 PM		447	465	468				460	9.2%
5:00 PM		493	480	507				493	9.8%
6:00 PM		322	327	371				340	6.8%
7:00 PM		199	237	227				221	4.4%
8:00 PM		136	169	173				159	3.2%
9:00 PM		96	110	142				116	2.3%
10:00 PM		63	67	78				69	1.4%
11:00 PM		42	50	42				45	0.9%
<b>Total</b>	<b>0</b>	<b>4,917</b>	<b>4,898</b>	<b>5,241</b>	<b>0</b>	<b>0</b>	<b>0</b>		
<b>24hr Total</b>		<b>4917</b>	<b>4898</b>	<b>5241</b>				<b>5,019</b>	
<b>AM Pk Hr</b>		7:00	7:00	7:00					
<b>AM Peak</b>		420	447	439				435	
<b>PM Pk Hr</b>		5:00	5:00	5:00					
<b>PM Peak</b>		493	480	507				493	
<b>% Pk Hr</b>		10.03%	9.80%	9.67%				9.83%	

**Appendix C**

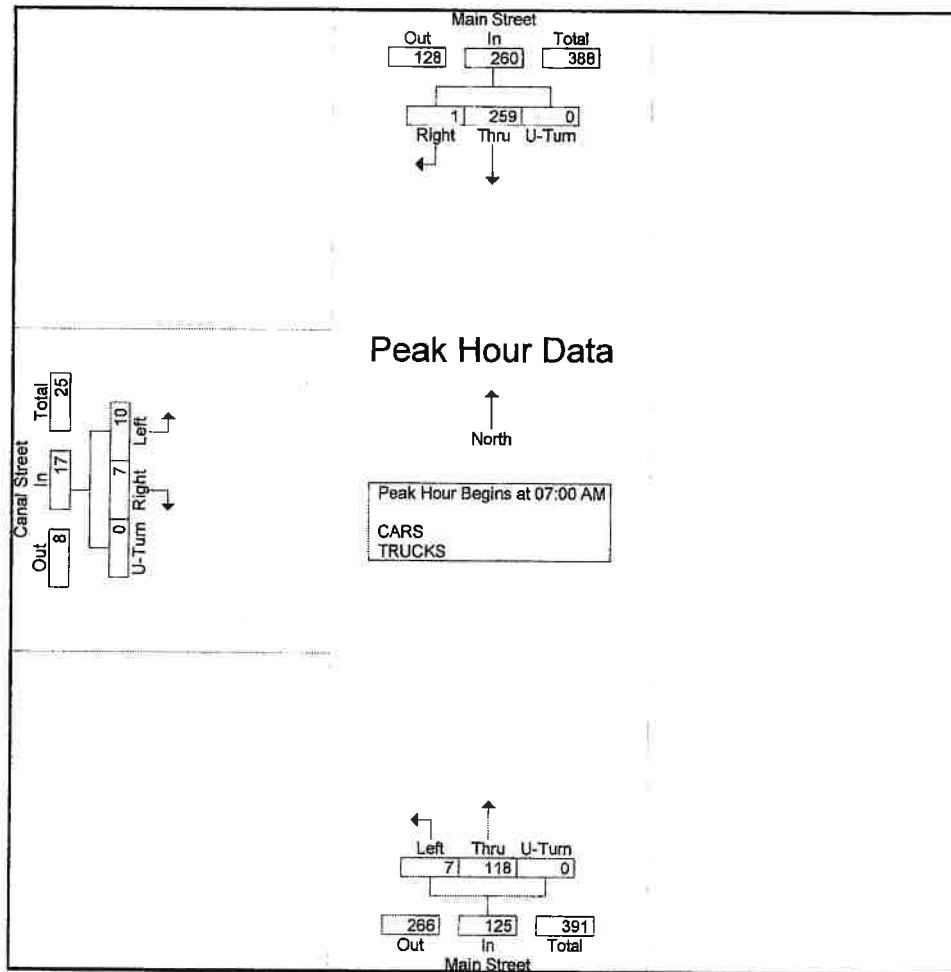
**Intersection Turning Movement Counts**

Stephen G. Pernaw & Company, Inc.  
P.O. Box 1721  
Concord, New Hampshire 03302

Weather: Clear  
Collected By: MV  
Job Number: 2003A  
Town/State: Allenstown, NH

File Name : 2003A\_INT\_A\_AM Main-Canal  
Site Code : 2003A  
Start Date : 3/12/2020  
Page No : 2

Start Time	Main Street From North				Main Street From South				Canal Street From West				Int. Total
	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:00 AM													
07:00 AM	1	67	0	68	34	1	0	35	0	2	0	2	105
07:15 AM	0	77	0	77	35	1	0	36	3	4	0	7	120
07:30 AM	0	61	0	61	18	2	0	20	4	1	0	5	86
07:45 AM	0	54	0	54	31	3	0	34	0	3	0	3	91
Total Volume	1	259	0	260	118	7	0	125	7	10	0	17	402
% App. Total	0.4	99.6	0		94.4	5.6	0		41.2	58.8	0		
PHF	.250	.841	.000	.844	.843	.583	.000	.868	.438	.625	.000	.607	.838

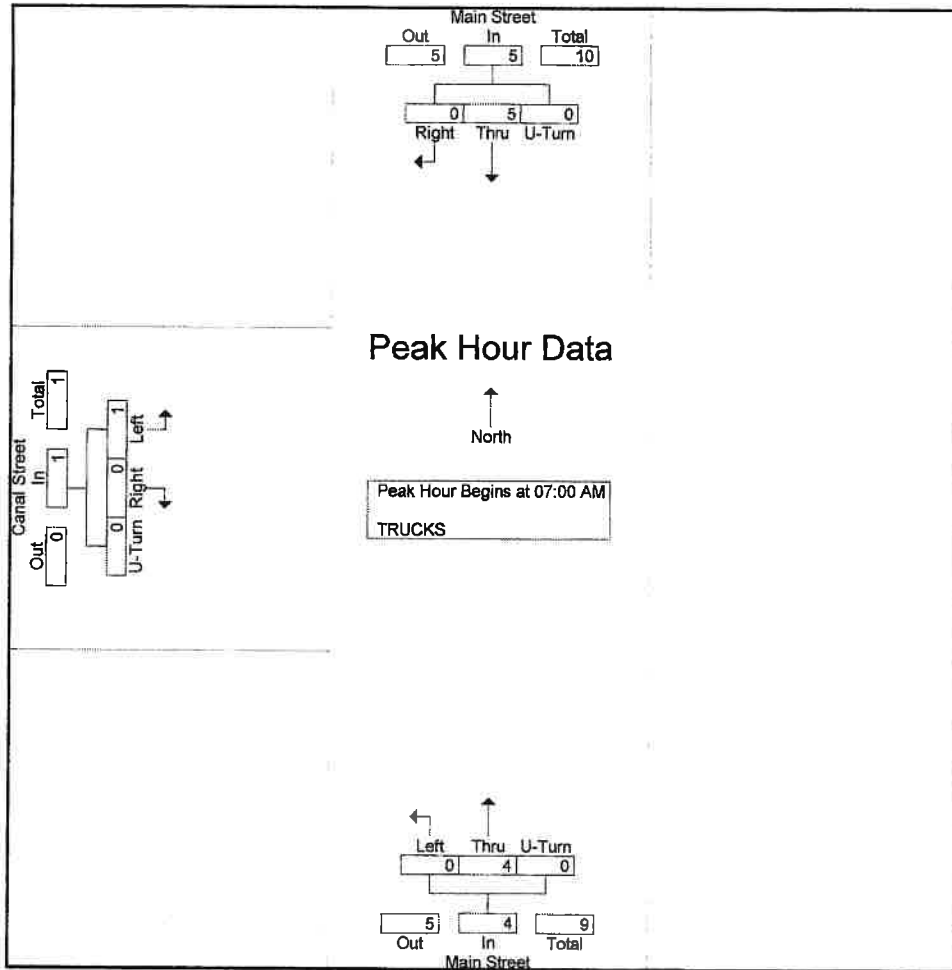


Stephen G. Pernaw & Company, Inc.  
P.O. Box 1721  
Concord, New Hampshire 03302

Weather: Clear  
Collected By: MV  
Job Number: 2003A  
Town/State: Allenstown, NH

File Name : 2003A\_INT\_A\_AM Main-Canal  
Site Code : 2003A  
Start Date : 3/12/2020  
Page No : 2

Start Time	Main Street From North				Main Street From South				Canal Street From West				Int. Total
	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	
Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:00 AM													
07:00 AM	0	1	0	1	1	0	0	1	0	0	0	0	2
07:15 AM	0	0	0	0	0	0	0	0	0	1	0	1	1
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	4	0	4	3	0	0	3	0	0	0	0	7
Total Volume	0	5	0	5	4	0	0	4	0	1	0	1	10
% App. Total	0	100	0		100	0	0		0	100	0		
PHF	.000	.313	.000	.313	.333	.000	.000	.333	.000	.250	.000	.250	.357





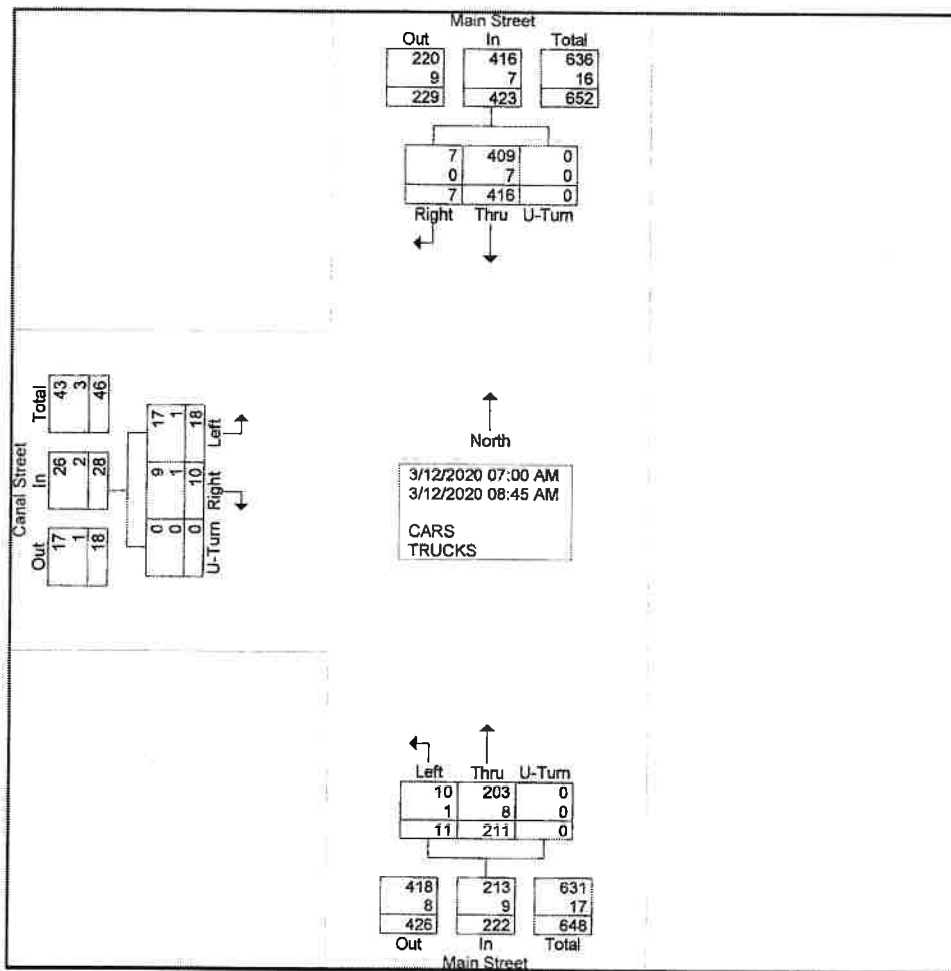
Stephen G. Pernaw & Company, Inc.  
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Weather: Clear  
Collected By: MV  
Job Number: 2003A  
Town/State: Allenstown, NH

File Name : 2003A\_INT\_A\_AM Main-Canal  
Site Code : 2003A  
Start Date : 3/12/2020  
Page No : 1

Groups Printed- CARS - TRUCKS

Start Time	Main Street From North				Main Street From South				Canal Street From West				Int. Total
	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	
07:00 AM	1	67	0	68	34	1	0	35	0	2	0	2	105
07:15 AM	0	77	0	77	35	1	0	36	3	4	0	7	120
07:30 AM	0	61	0	61	18	2	0	20	4	1	0	5	86
07:45 AM	0	54	0	54	31	3	0	34	0	3	0	3	91
<b>Total</b>	<b>1</b>	<b>259</b>	<b>0</b>	<b>260</b>	<b>118</b>	<b>7</b>	<b>0</b>	<b>125</b>	<b>7</b>	<b>10</b>	<b>0</b>	<b>17</b>	<b>402</b>
08:00 AM	2	52	0	54	34	1	0	35	1	3	0	4	93
08:15 AM	1	46	0	47	17	1	0	18	0	2	0	2	67
08:30 AM	1	35	0	36	16	1	0	17	1	1	0	2	55
08:45 AM	2	24	0	26	26	1	0	27	1	2	0	3	56
<b>Total</b>	<b>6</b>	<b>157</b>	<b>0</b>	<b>163</b>	<b>93</b>	<b>4</b>	<b>0</b>	<b>97</b>	<b>3</b>	<b>8</b>	<b>0</b>	<b>11</b>	<b>271</b>
<b>Grand Total</b>	<b>7</b>	<b>416</b>	<b>0</b>	<b>423</b>	<b>211</b>	<b>11</b>	<b>0</b>	<b>222</b>	<b>10</b>	<b>18</b>	<b>0</b>	<b>28</b>	<b>673</b>
Apprch %	1.7	98.3	0		95	5	0		35.7	64.3	0		
Total %	1	61.8	0	62.9	31.4	1.6	0	33	1.5	2.7	0	4.2	
CARS	7	409	0	416	203	10	0	213	9	17	0	26	655
% CARS	100	98.3	0	98.3	96.2	90.9	0	95.9	90	94.4	0	92.9	97.3
TRUCKS	0	7	0	7	8	1	0	9	1	1	0	2	18
% TRUCKS	0	1.7	0	1.7	3.8	9.1	0	4.1	10	5.6	0	7.1	2.7



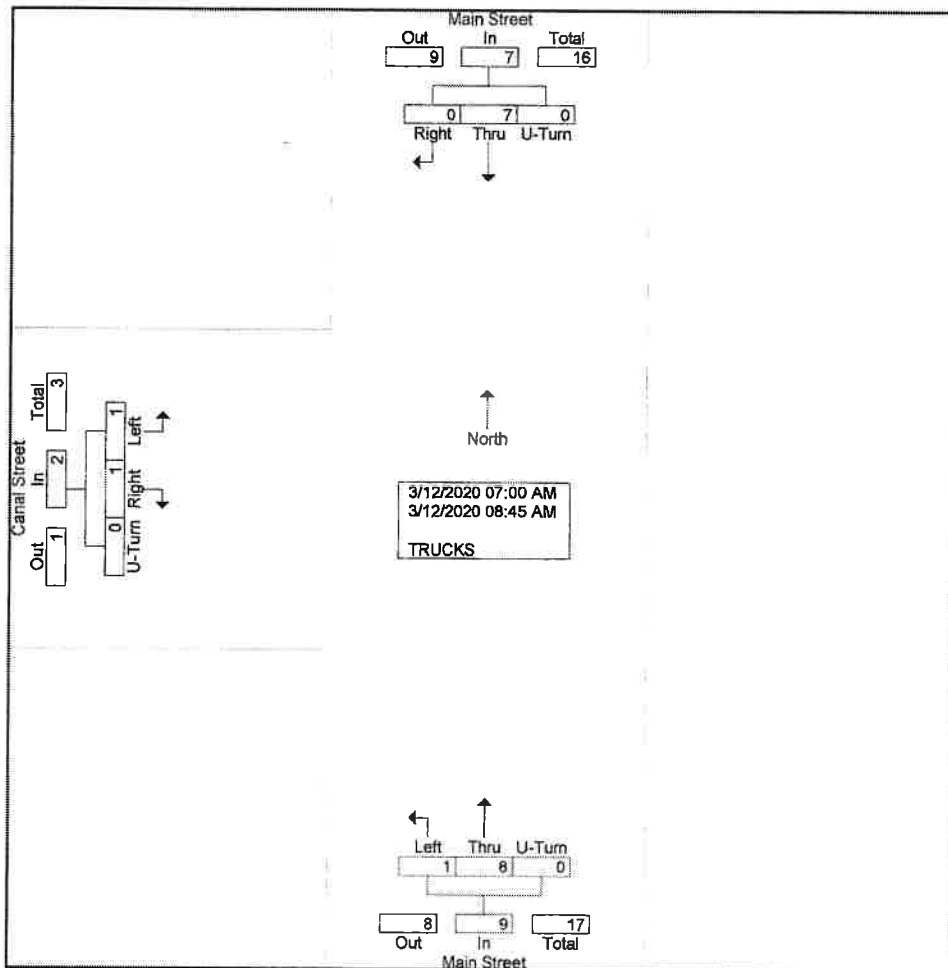
Stephen G. Pernaw & Company, Inc.  
P.O. Box 1721  
Concord, New Hampshire 03302

Weather: Clear  
Collected By: MV  
Job Number: 2003A  
Town/State: Allentown, NH

File Name : 2003A\_INT\_A\_AM Main-Canal  
Site Code : 2003A  
Start Date : 3/12/2020  
Page No : 1

Groups Printed- TRUCKS

Start Time	Main Street From North				Main Street From South				Canal Street From West				Int. Total
	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	
07:00 AM	0	1	0	1	1	0	0	1	0	0	0	0	2
07:15 AM	0	0	0	0	0	0	0	0	0	1	0	1	1
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	4	0	4	3	0	0	3	0	0	0	0	7
<b>Total</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>5</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>10</b>
08:00 AM	0	0	0	0	3	0	0	3	0	0	0	0	3
08:15 AM	0	2	0	2	1	1	0	2	0	0	0	0	4
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	1	0	0	1	1
<b>Total</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>2</b>	<b>4</b>	<b>1</b>	<b>0</b>	<b>5</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>8</b>
<b>Grand Total</b>	<b>0</b>	<b>7</b>	<b>0</b>	<b>7</b>	<b>8</b>	<b>1</b>	<b>0</b>	<b>9</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>2</b>	<b>18</b>
Approch %	0	100	0		88.9	11.1	0		50	50	0		
Total %	0	38.9	0	38.9	44.4	5.6	0	50	5.6	5.6	0	11.1	

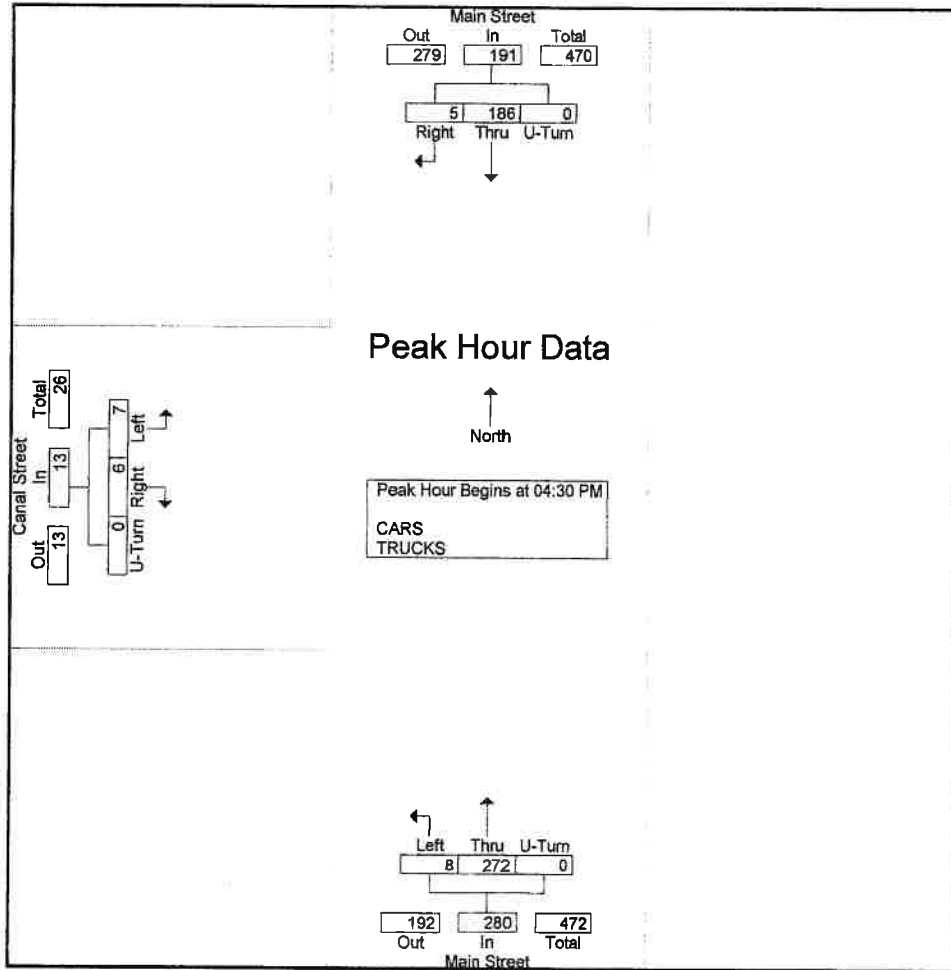


Stephen G. Pernaw & Company, Inc.  
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Concord, New Hampshire 03302

Weather: Clear  
Collected By: MV  
Job Number: 2003A  
Town/State: Allenstown, NH

File Name : 2003A\_INT\_A\_PM Main-Canal  
Site Code : 2003A  
Start Date : 3/11/2020  
Page No : 3

Start Time	Main Street From North				Main Street From South				Canal Street From West				Int. Total
	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	
Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:30 PM													
04:30 PM	2	47	0	49	53	4	0	57	2	1	0	3	109
04:45 PM	3	49	0	52	70	1	0	71	0	2	0	2	125
05:00 PM	0	44	0	44	74	2	0	76	2	4	0	6	126
05:15 PM	0	46	0	46	75	1	0	76	2	0	0	2	124
Total Volume	5	186	0	191	272	8	0	280	6	7	0	13	484
% App. Total	2.6	97.4	0		97.1	2.9	0		46.2	53.8	0		
PHF	.417	.949	.000	.918	.907	.500	.000	.921	.750	.438	.000	.542	.960

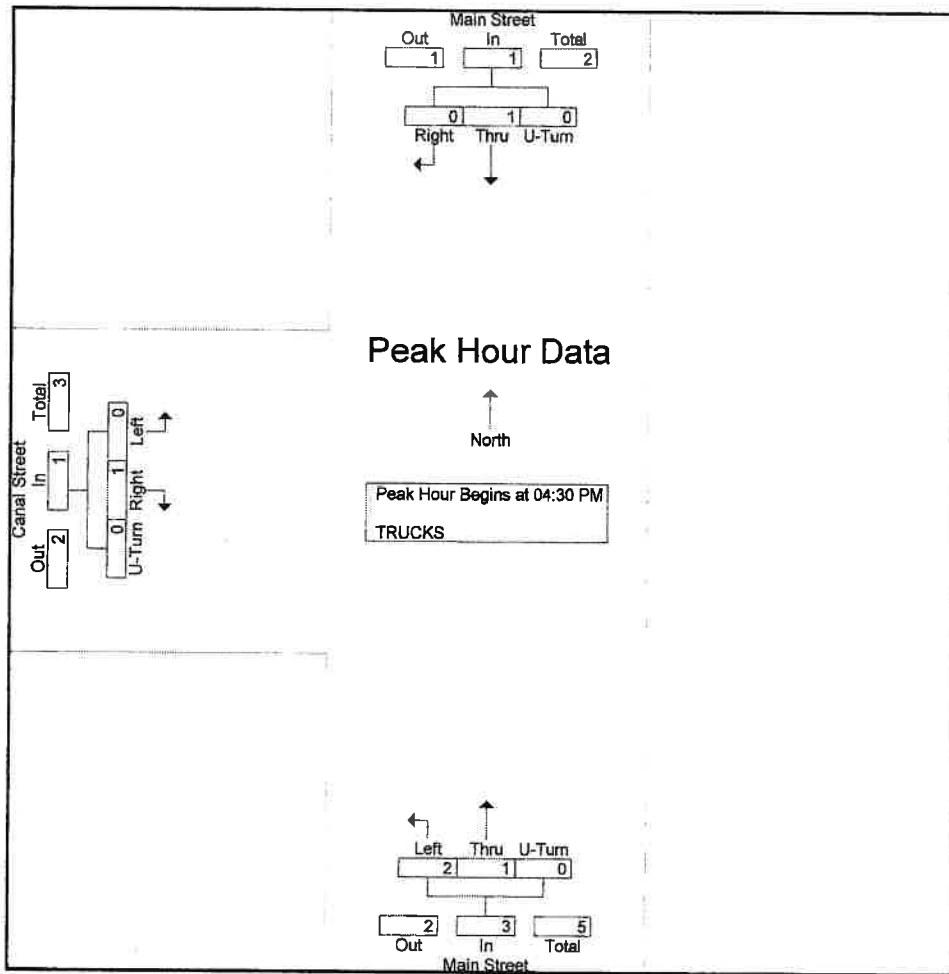


Stephen G. Pernaw & Company, Inc.  
P.O. Box 1721  
Concord, New Hampshire 03302

Weather: Clear  
Collected By: MV  
Job Number: 2003A  
Town/State: Allentown, NH

File Name : 2003A\_INT\_A\_PM Main-Canal  
Site Code : 2003A  
Start Date : 3/11/2020  
Page No : 3

Start Time	Main Street From North				Main Street From South				Canal Street From West				Int. Total
	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	
Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:30 PM													
04:30 PM	0	1	0	1	0	1	0	1	0	0	0	0	2
04:45 PM	0	0	0	0	1	1	0	2	0	0	0	0	2
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	1	0	0	1	1
Total Volume	0	1	0	1	1	2	0	3	1	0	0	1	5
% App. Total	0	100	0		33.3	66.7	0		100	0	0		
PHF	.000	.250	.000	.250	.250	.500	.000	.375	.250	.000	.000	.250	.625



Stephen G. Pernaw & Company, Inc.  
P.O. Box 1721  
Concord, New Hampshire 03302

Weather: Clear  
Collected By: MV  
Job Number: 2003A  
Town/State: Allenstown, NH

File Name : 2003A\_INT\_A\_PM Main-Canal  
Site Code : 2003A  
Start Date : 3/11/2020  
Page No : 1

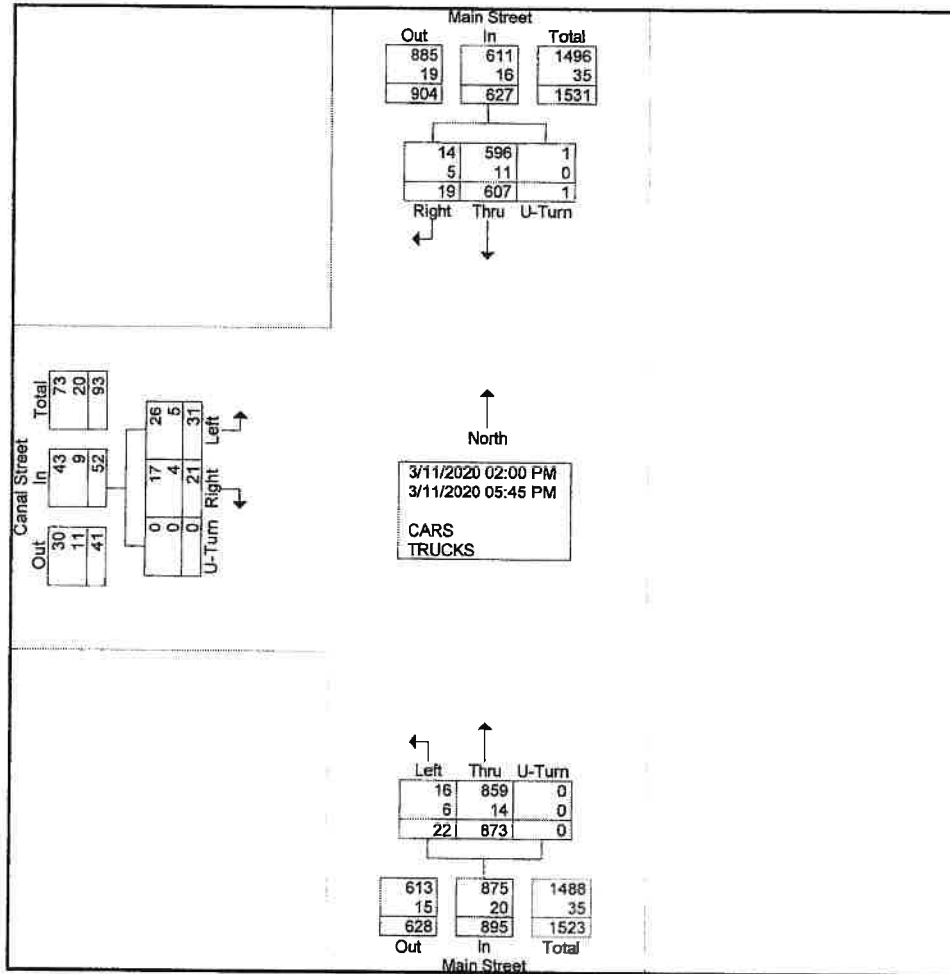
Groups Printed- CARS - TRUCKS

Start Time	Main Street From North				Main Street From South				Canal Street From West				Int. Total
	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	
02:00 PM	0	25	0	25	35	2	0	37	1	4	0	5	67
02:15 PM	1	32	0	33	37	0	0	37	1	0	0	1	71
02:30 PM	0	33	0	33	57	1	0	58	1	0	0	1	92
02:45 PM	0	35	0	35	35	0	0	35	0	2	0	2	72
Total	1	125	0	126	164	3	0	167	3	6	0	9	302
03:00 PM	2	41	0	43	38	0	0	38	1	1	0	2	83
03:15 PM	3	45	0	48	41	3	0	44	0	3	0	3	95
03:30 PM	1	35	0	36	64	4	0	68	5	4	0	9	113
03:45 PM	0	34	0	34	53	1	0	54	3	1	0	4	92
Total	6	155	0	161	196	8	0	204	9	9	0	18	383
04:00 PM	0	42	0	42	58	0	0	58	0	4	0	4	104
04:15 PM	1	42	0	43	47	3	0	50	1	1	0	2	95
04:30 PM	2	47	0	49	53	4	0	57	2	1	0	3	109
04:45 PM	3	49	0	52	70	1	0	71	0	2	0	2	125
Total	6	180	0	186	228	8	0	236	3	8	0	11	433
05:00 PM	0	44	0	44	74	2	0	76	2	4	0	6	126
05:15 PM	0	46	0	46	75	1	0	76	2	0	0	2	124
05:30 PM	1	27	1	29	73	0	0	73	1	0	0	1	103
05:45 PM	5	30	0	35	63	0	0	63	1	4	0	5	103
Total	6	147	1	154	285	3	0	288	6	8	0	14	456
Grand Total	19	607	1	627	873	22	0	895	21	31	0	52	1574
Apprch %	3	96.8	0.2		97.5	2.5	0		40.4	59.6	0		
Total %	1.2	38.6	0.1	39.8	55.5	1.4	0	56.9	1.3	2	0	3.3	
CARS	14	596	1	611	859	16	0	875	17	26	0	43	1529
% CARS	73.7	98.2	100	97.4	98.4	72.7	0	97.8	81	83.9	0	82.7	97.1
TRUCKS	5	11	0	16	14	6	0	20	4	5	0	9	45
% TRUCKS	26.3	1.8	0	2.6	1.6	27.3	0	2.2	19	16.1	0	17.3	2.9

Stephen G. Pernaw & Company, Inc.  
P.O. Box 1721  
Concord, New Hampshire 03302

Weather: Clear  
Collected By: MV  
Job Number: 2003A  
Town/State: Allentown, NH

File Name : 2003A\_INT\_A\_PM Main-Canal  
Site Code : 2003A  
Start Date : 3/11/2020  
Page No : 2



Stephen G. Pernaw & Company, Inc.  
P.O. Box 1721  
Concord, New Hampshire 03302

Weather: Clear  
Collected By: MV  
Job Number: 2003A  
Town/State: Allentown, NH

File Name : 2003A\_INT\_A\_PM Main-Canal  
Site Code : 2003A  
Start Date : 3/11/2020  
Page No : 1

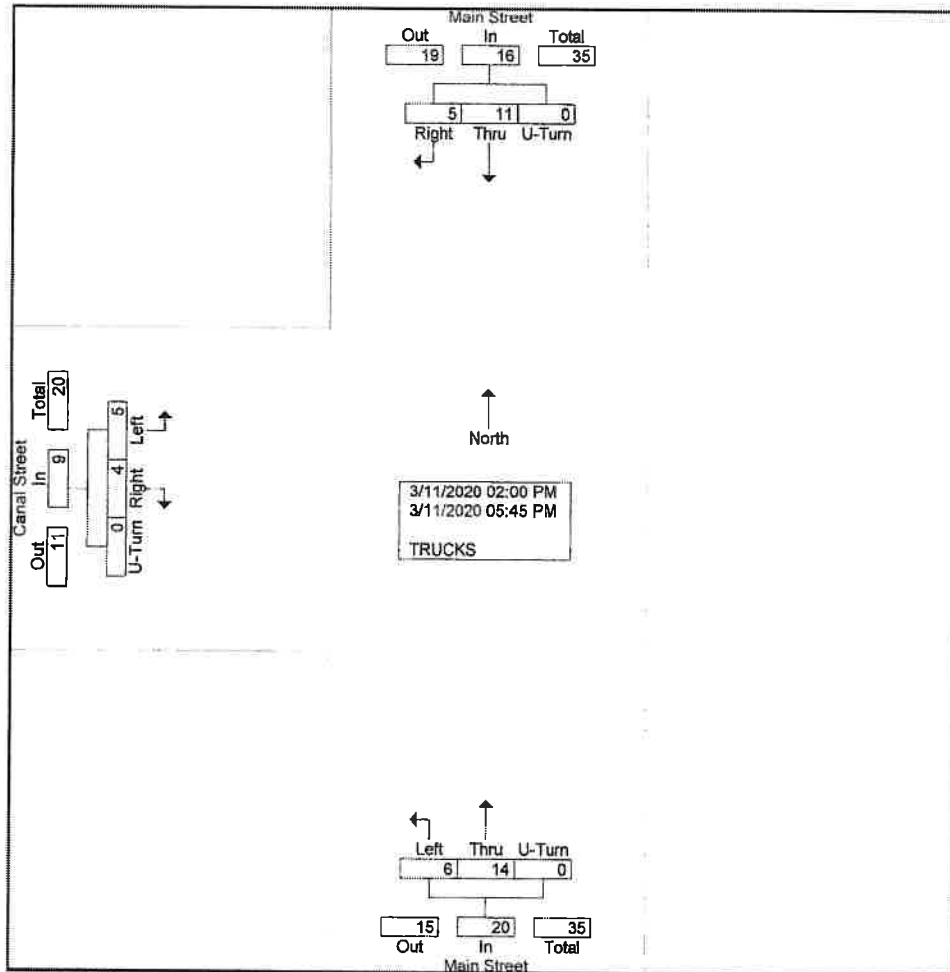
Groups Printed- TRUCKS

Start Time	Main Street From North				Main Street From South				Canal Street From West				Int. Total
	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	
02:00 PM	0	1	0	1	2	1	0	3	0	0	0	0	4
02:15 PM	1	0	0	1	2	0	0	2	1	0	0	1	4
02:30 PM	0	3	0	3	1	0	0	1	0	0	0	0	4
02:45 PM	0	2	0	2	1	0	0	1	0	1	0	1	4
Total	1	6	0	7	6	1	0	7	1	1	0	2	16
03:00 PM	0	1	0	1	1	0	0	1	0	0	0	0	2
03:15 PM	2	0	0	2	0	2	0	2	0	0	0	0	4
03:30 PM	1	0	0	1	1	1	0	2	1	1	0	2	5
03:45 PM	0	1	0	1	1	0	0	1	1	1	0	2	4
Total	3	2	0	5	3	3	0	6	2	2	0	4	15
04:00 PM	0	2	0	2	1	0	0	1	0	2	0	2	5
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	1	0	1	0	1	0	1	0	0	0	0	2
04:45 PM	0	0	0	0	1	1	0	2	0	0	0	0	2
Total	0	3	0	3	2	2	0	4	0	2	0	2	9
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	1	0	0	1	1
05:30 PM	0	0	0	0	2	0	0	2	0	0	0	0	2
05:45 PM	1	0	0	1	1	0	0	1	0	0	0	0	2
Total	1	0	0	1	3	0	0	3	1	0	0	1	5
Grand Total	5	11	0	16	14	6	0	20	4	5	0	9	45
Apprch %	31.2	68.8	0		70	30	0		44.4	55.6	0		
Total %	11.1	24.4	0	35.6	31.1	13.3	0	44.4	8.9	11.1	0	20	

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Weather: Clear  
Collected By: MV  
Job Number: 2003A  
Town/State: Allentown, NH

File Name : 2003A\_INT\_A\_PM Main-Canal  
Site Code : 2003A  
Start Date : 3/11/2020  
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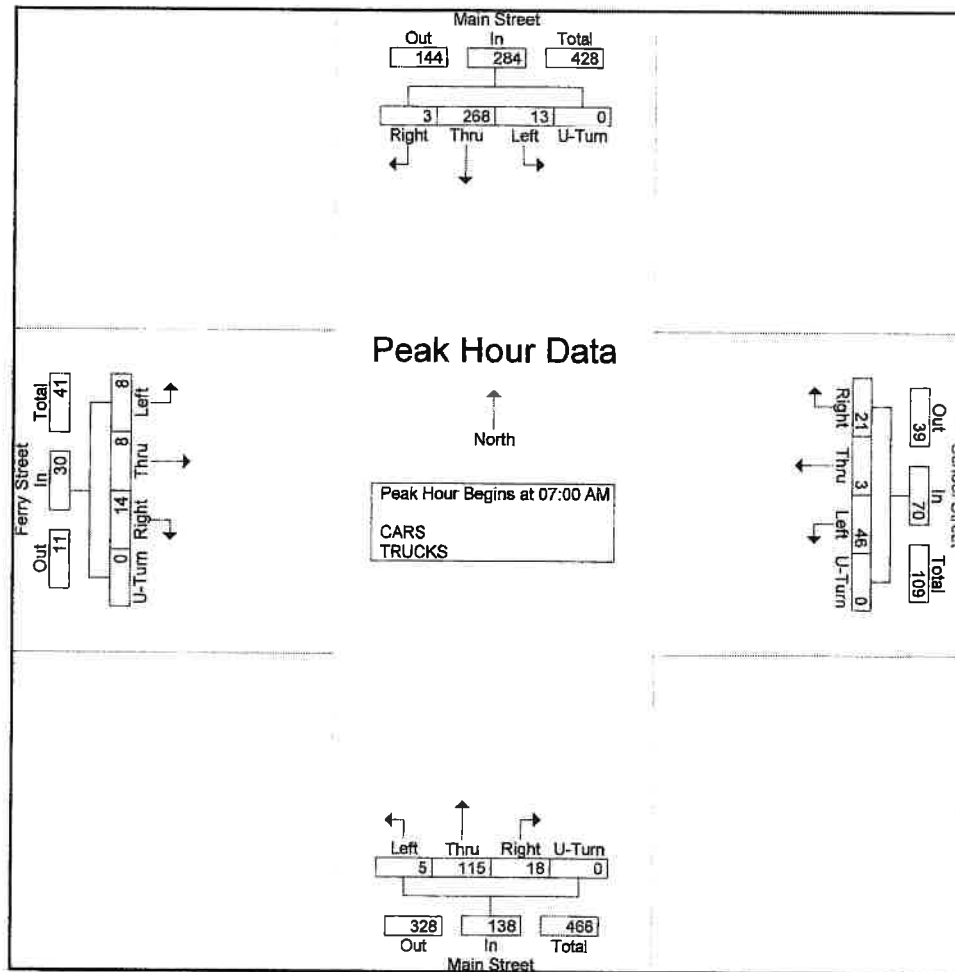


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P.O. Box 1721  
Concord, New Hampshire 03302

Weather: Clear  
Collected By: MV  
Job Number: 2003A  
Town/State: Allenstown, NH

File Name : 2003A\_INT\_B\_AM Main-Ferry  
Site Code : 2003A  
Start Date : 3/12/2020  
Page No : 2

Start Time	Main Street From North					School Street From East					Main Street From South					Ferry Street From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	1	66	2	0	69	4	0	8	0	12	3	33	1	0	37	4	5	2	0	11	129
07:15 AM	0	79	3	0	82	4	1	8	0	13	1	33	1	0	35	5	1	2	0	8	138
07:30 AM	2	62	3	0	67	3	0	6	0	9	7	22	0	0	29	2	1	1	0	4	109
07:45 AM	0	61	5	0	66	10	2	24	0	36	7	27	3	0	37	3	1	3	0	7	146
Total Volume	3	268	13	0	284	21	3	46	0	70	18	115	5	0	138	14	8	8	0	30	522
% App. Total	1.1	94.4	4.6	0		30	4.3	65.7	0		13	83.3	3.6	0		46.7	26.7	26.7	0		
PHF	.375	.848	.650	.000	.866	.525	.375	.479	.000	.486	.643	.871	.417	.000	.932	.700	.400	.667	.000	.682	.894

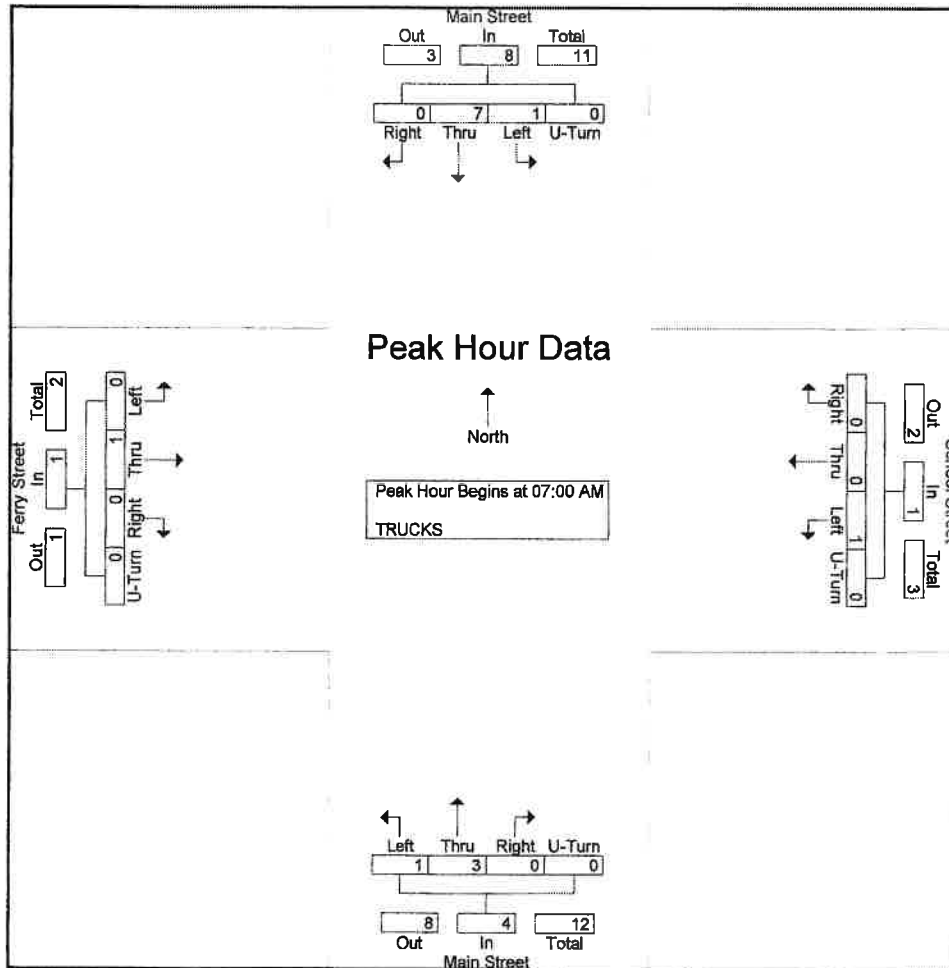


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P.O. Box 1721  
Concord, New Hampshire 03302

Weather: Clear  
Collected By: MV  
Job Number: 2003A  
Town/State: Allenstown, NH

File Name : 2003A\_INT\_B\_AM Main-Ferry  
Site Code : 2003A  
Start Date : 3/12/2020  
Page No : 2

Start Time	Main Street From North					School Street From East					Main Street From South					Ferry Street From West					Int. Total
	Right	Thru	Left	U-Turn	App Total	Right	Thru	Left	U-Turn	App Total	Right	Thru	Left	U-Turn	App Total	Right	Thru	Left	U-Turn	App Total	
Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	2
07:15 AM	0	0	0	0	0	0	0	1	0	1	0	1	0	0	1	0	0	0	0	0	2
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	6	1	0	7	0	0	0	0	0	0	2	1	0	3	0	0	0	0	0	10
Total Volume	0	7	1	0	8	0	0	1	0	1	0	3	1	0	4	0	1	0	0	1	14
% App. Total	0	87.5	12.5	0		0	0	100	0		0	75	25	0		0	100	0	0		
PHF	.000	.292	.250	.000	.286	.000	.000	.250	.000	.250	.000	.375	.250	.000	.333	.000	.250	.000	.000	.250	.350



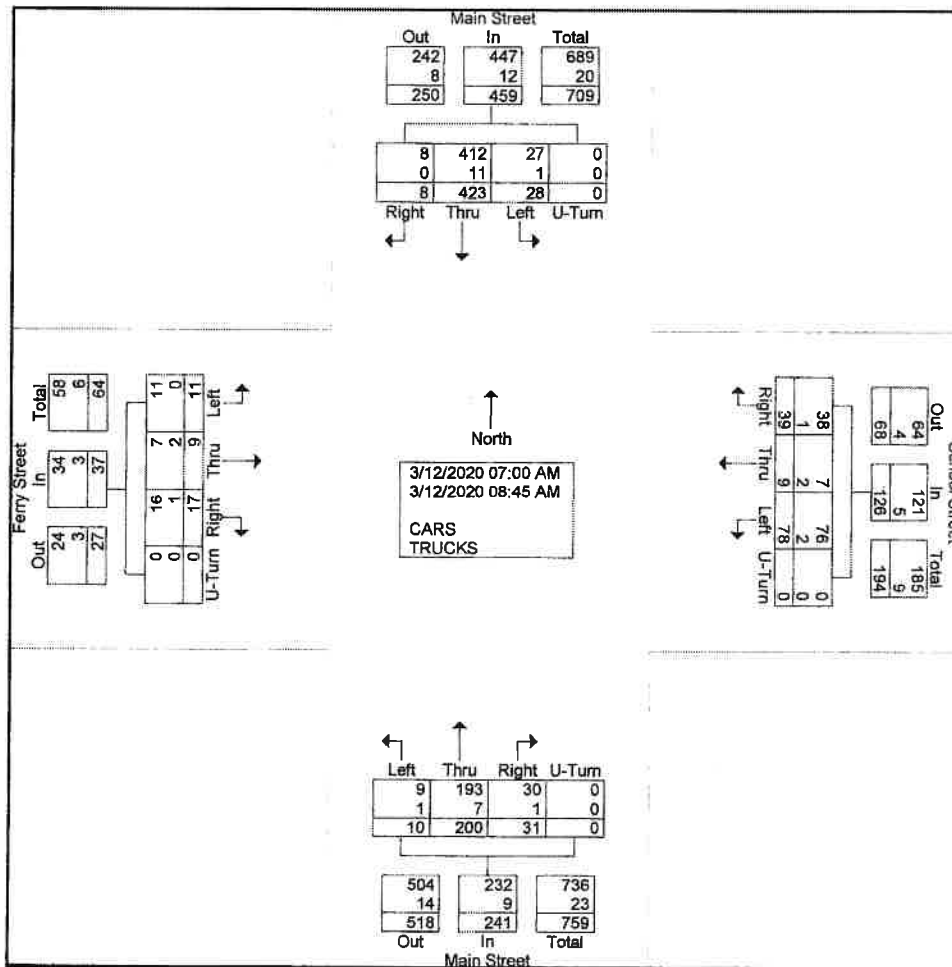
Stephen G. Pernaw & Company, Inc.  
P.O. Box 1721  
Concord, New Hampshire 03302

Weather: Clear  
Collected By: MV  
Job Number: 2003A  
Town/State: Allentown, NH

File Name : 2003A\_INT\_B\_AM Main-Ferry  
Site Code : 2003A  
Start Date : 3/12/2020  
Page No : 1

Groups Printed- CARS - TRUCKS

Start Time	Main Street From North					School Street From East					Main Street From South					Ferry Street From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
07:00 AM	1	66	2	0	69	4	0	8	0	12	3	33	1	0	37	4	5	2	0	11	129
07:15 AM	0	79	3	0	82	4	1	8	0	13	1	33	1	0	35	5	1	2	0	8	138
07:30 AM	2	62	3	0	67	3	0	6	0	9	7	22	0	0	29	2	1	1	0	4	109
07:45 AM	0	61	5	0	66	10	2	24	0	36	7	27	3	0	37	3	1	3	0	7	146
Total	3	268	13	0	284	21	3	46	0	70	18	115	5	0	138	14	8	8	0	30	522
08:00 AM	2	53	3	0	58	7	1	19	0	27	6	32	3	0	41	2	1	0	0	3	129
08:15 AM	3	41	2	0	46	3	1	6	0	10	4	18	1	0	23	0	0	1	0	1	80
08:30 AM	0	36	3	0	39	4	2	4	0	10	3	15	1	0	19	1	0	0	0	1	69
08:45 AM	0	25	7	0	32	4	2	3	0	9	0	20	0	0	20	0	0	2	0	2	63
Total	5	155	15	0	175	18	6	32	0	56	13	85	5	0	103	3	1	3	0	7	341
Grand Total	8	423	28	0	459	39	9	78	0	126	31	200	10	0	241	17	9	11	0	37	863
Apprch %	1.7	92.2	6.1	0		31	7.1	61.9	0		12.9	83	4.1	0		45.9	24.3	29.7	0		
Total %	0.9	49	3.2	0	53.2	4.5	1	9	0	14.6	3.6	23.2	1.2	0	27.9	2	1	1.3	0	4.3	
CARS	8	412	27	0	447	38	7	76	0	121	30	193	9	0	232	16	7	11	0	34	834
% CARS	100	97.4	96.4	0	97.4	97.4	77.8	97.4	0	96	96.8	96.5	90	0	96.3	94.1	77.8	100	0	91.9	96.6
TRUCKS	0	11	1	0	12	1	2	2	0	5	1	7	1	0	9	1	2	0	0	3	29
% TRUCKS	0	2.6	3.6	0	2.6	2.6	22.2	2.6	0	4	3.2	3.5	10	0	3.7	5.9	22.2	0	0	8.1	3.4



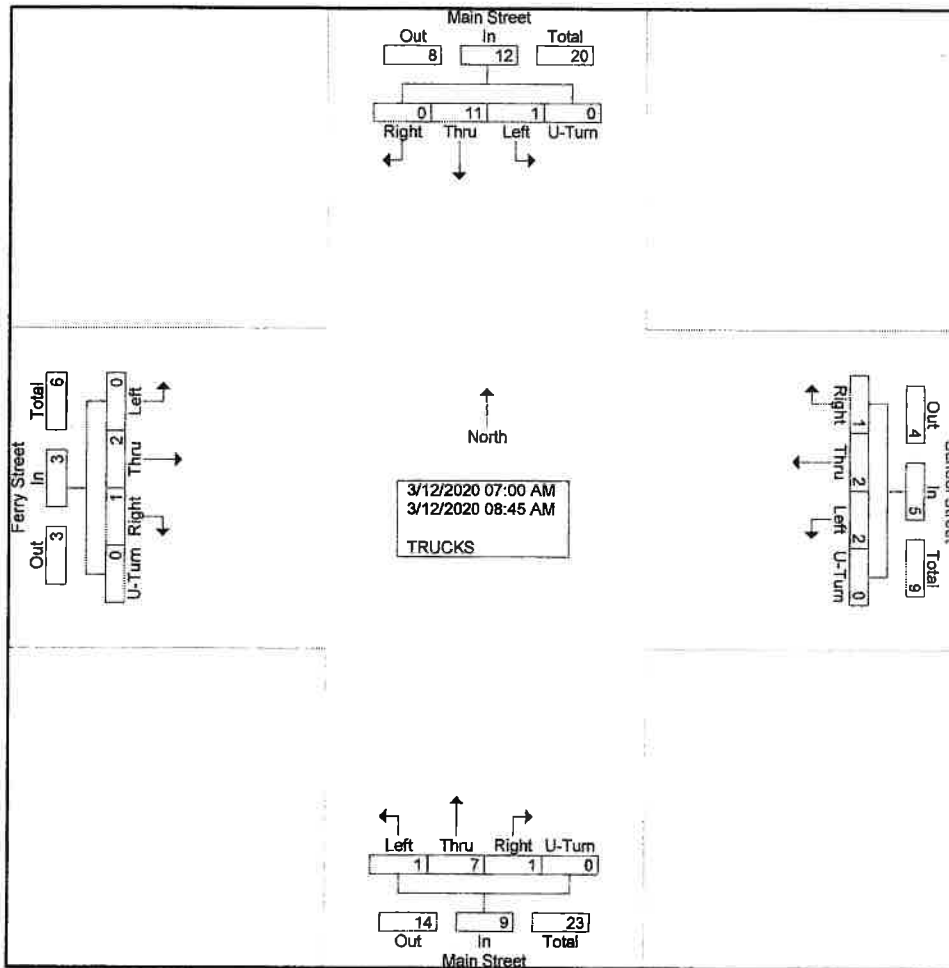
Stephen G. Pernaw & Company, Inc.  
P.O. Box 1721  
Concord, New Hampshire 03302

Weather: Clear  
Collected By: MV  
Job Number: 2003A  
Town/State: Allenstown, NH

File Name : 2003A\_INT\_B\_AM Main-Ferry  
Site Code : 2003A  
Start Date : 3/12/2020  
Page No : 1

Groups Printed- TRUCKS

Start Time	Main Street From North					School Street From East					Main Street From South					Ferry Street From West					Int. Total					
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total						
07:00 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
07:15 AM	0	0	0	0	0	0	0	1	0	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	2
07:30 AM	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
07:45 AM	0	6	1	0	7	0	0	0	0	0	0	2	1	0	3	0	0	0	0	0	0	0	0	0	0	10
Total	0	7	1	0	8	0	0	1	0	1	0	3	1	0	4	0	1	0	0	1	0	0	0	0	0	14
08:00 AM	0	1	0	0	1	0	0	1	0	1	1	3	0	0	4	0	1	0	0	1	0	0	0	0	0	7
08:15 AM	0	2	0	0	2	1	0	0	0	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	4
08:30 AM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	3
08:45 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	4	0	0	4	1	2	1	0	4	1	4	0	0	5	1	1	0	0	2	0	0	0	0	0	15
Grand Total	0	11	1	0	12	1	2	2	0	5	1	7	1	0	9	1	2	0	0	3	0	0	0	0	0	29
Apprch %	0	91.7	8.3	0		20	40	40	0		11.1	77.8	11.1	0		33.3	66.7	0	0							
Total %	0	37.9	3.4	0	41.4	3.4	6.9	6.9	0	17.2	3.4	24.1	3.4	0	31	3.4	6.9	0	0	10.3						

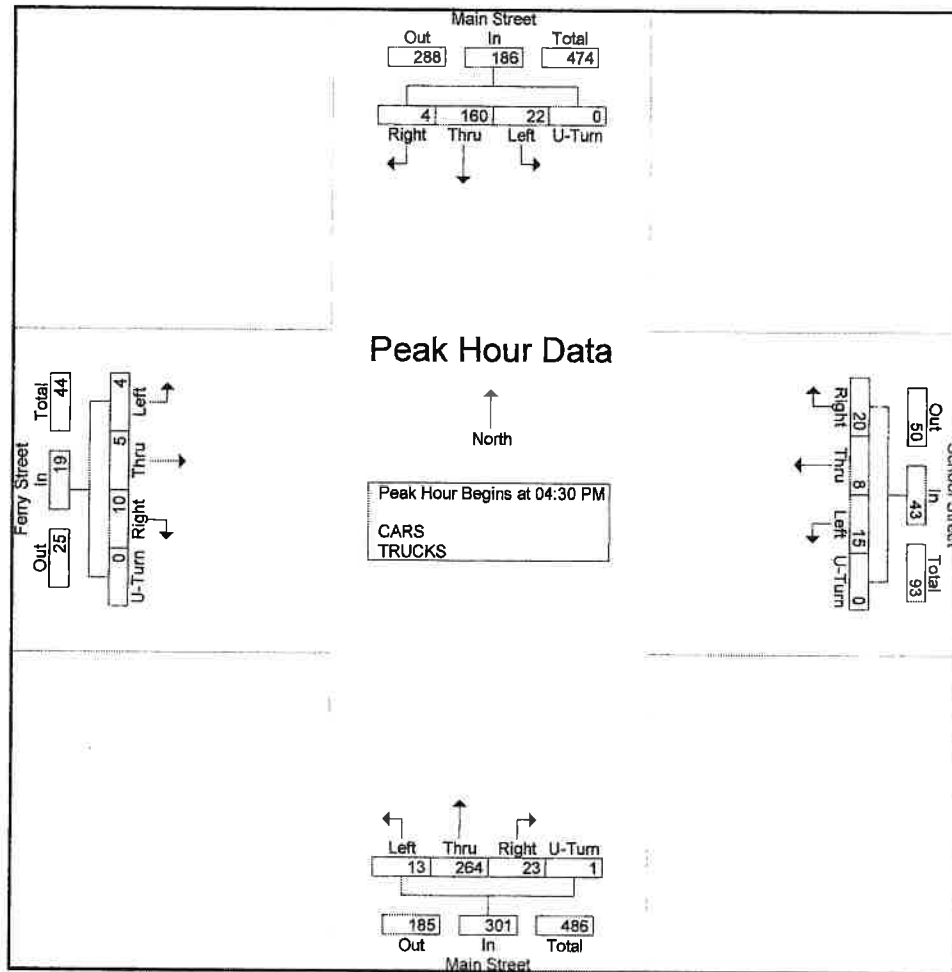


Stephen G. Pernaw & Company, Inc.  
P.O. Box 1721  
Concord, New Hampshire 03302

Weather: Clear  
Collected By: MV  
Job Number: 2003A  
Town/State: Allentown, NH

File Name : 2003A\_INT\_B\_PM Main-Ferry  
Site Code : 2003A  
Start Date : 3/11/2020  
Page No : 3

Start Time	Main Street From North					School Street From East					Main Street From South					Ferry Street From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	0	43	6	0	49	6	4	3	0	13	3	60	2	0	65	0	1	0	0	1	128
04:45 PM	2	41	4	0	47	4	1	3	0	8	3	62	1	0	66	4	0	1	0	5	126
05:00 PM	0	34	10	0	44	4	2	5	0	11	7	71	5	0	83	3	3	2	0	8	146
05:15 PM	2	42	2	0	46	6	1	4	0	11	10	71	5	1	87	3	1	1	0	5	149
Total Volume	4	160	22	0	186	20	8	15	0	43	23	264	13	1	301	10	5	4	0	19	549
% App. Total	2.2	86	11.8	0		46.5	18.6	34.9	0		7.6	87.7	4.3	0.3		52.6	26.3	21.1	0		
PHF	.500	.930	.550	.000	.949	.833	.500	.750	.000	.827	.575	.930	.650	.250	.865	.625	.417	.500	.000	.594	.921

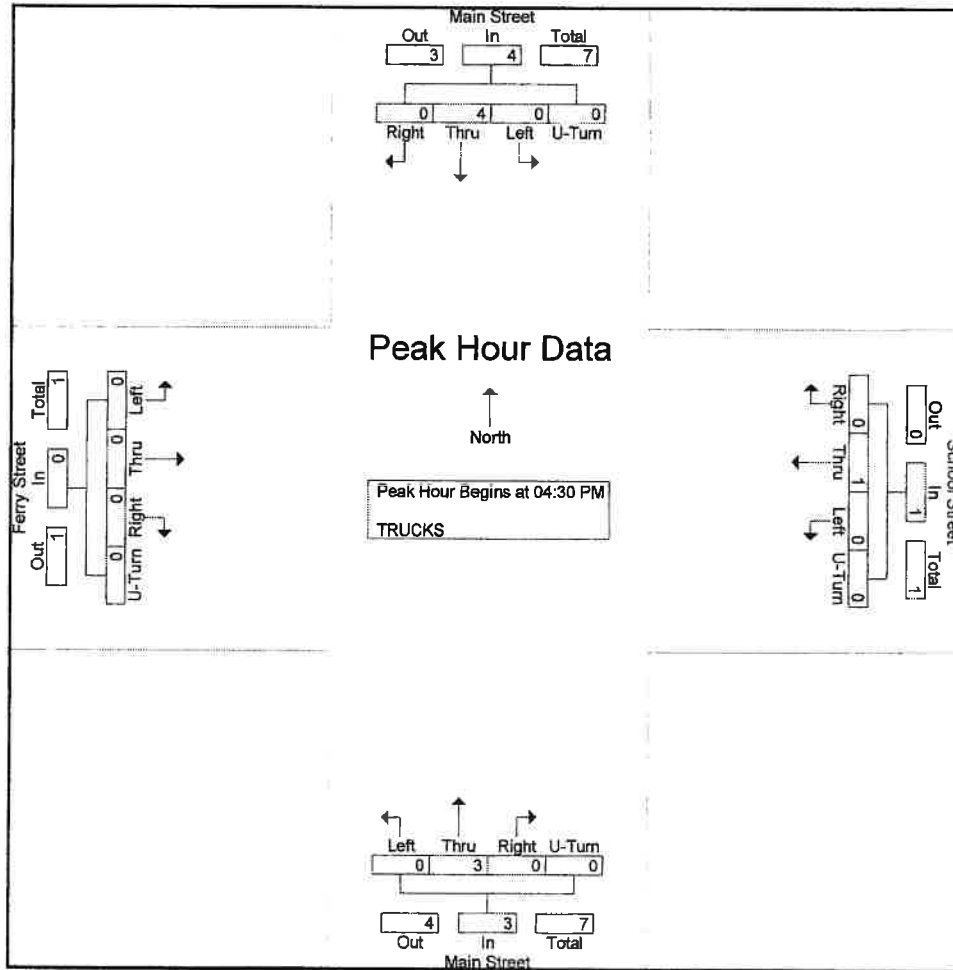


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Concord, New Hampshire 03302

Weather: Clear  
Collected By: MV  
Job Number: 2003A  
Town/State: Allentown, NH

File Name : 2003A\_INT\_B\_PM Main-Ferry  
Site Code : 2003A  
Start Date : 3/11/2020  
Page No : 3

Start Time	Main Street From North					School Street From East					Main Street From South					Ferry Street From West					Int. Total	
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total		
Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1																						
Peak Hour for Entire Intersection Begins at 04:30 PM																						
04:30 PM	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	3
04:45 PM	0	0	0	0	0	0	1	0	0	1	0	2	0	0	2	0	0	0	0	0	0	3
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Total Volume	0	4	0	0	4	0	1	0	0	1	0	3	0	0	3	0	0	0	0	0	0	8
% App. Total	0	100	0	0		0	100	0	0		0	100	0	0		0	0	0	0		0	
PHF	.000	.500	.000	.000	.500	.000	.250	.000	.000	.250	.000	.375	.000	.000	.375	.000	.000	.000	.000	.000	.000	.667



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Weather: Clear  
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Town/State: Allentown, NH

File Name : 2003A\_INT\_B\_PM Main-Ferry  
Site Code : 2003A  
Start Date : 3/11/2020  
Page No : 1

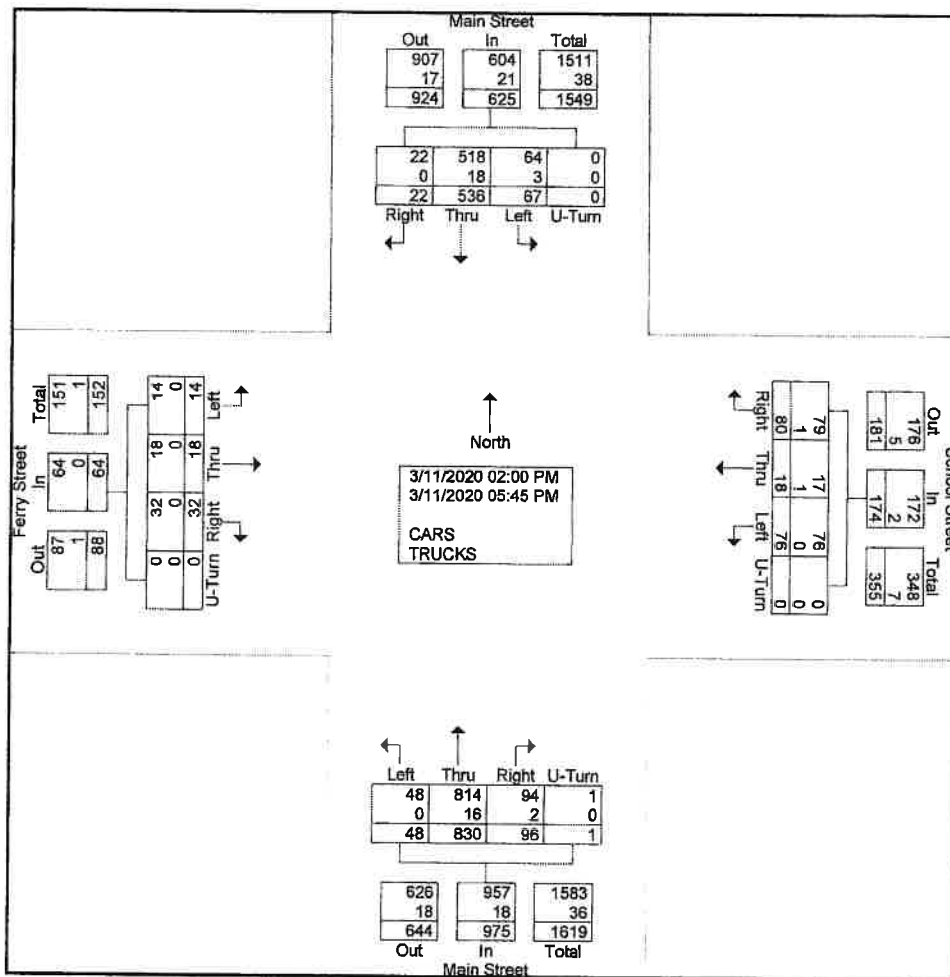
Groups Printed- CARS - TRUCKS

Start Time	Main Street From North					School Street From East					Main Street From South					Ferry Street From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
02:00 PM	1	21	3	0	25	4	1	2	0	7	3	30	1	0	34	2	3	3	0	8	74
02:15 PM	0	33	5	0	38	5	0	13	0	18	3	35	1	0	39	1	1	0	0	2	97
02:30 PM	2	29	4	0	35	6	0	8	0	14	11	52	2	0	65	2	1	0	0	3	117
02:45 PM	2	31	1	0	34	5	1	5	0	11	3	31	2	0	36	0	1	0	0	1	82
Total	5	114	13	0	132	20	2	28	0	50	20	148	6	0	174	5	6	3	0	14	370
03:00 PM	0	34	4	0	38	7	1	5	0	13	8	35	0	0	43	4	0	0	0	4	98
03:15 PM	2	34	1	0	37	3	1	4	0	8	5	41	5	0	51	0	0	2	0	2	98
03:30 PM	1	40	5	0	46	5	0	5	0	10	3	62	3	0	68	1	1	1	0	3	127
03:45 PM	1	30	4	0	35	5	1	3	0	9	7	52	3	0	62	0	1	1	0	2	108
Total	4	138	14	0	156	20	3	17	0	40	23	190	11	0	224	5	2	4	0	11	431
04:00 PM	2	33	6	0	41	5	3	1	0	9	7	49	4	0	60	4	1	1	0	6	116
04:15 PM	3	35	5	0	43	4	1	5	0	10	10	54	5	0	69	4	1	0	0	5	127
04:30 PM	0	43	6	0	49	6	4	3	0	13	3	60	2	0	65	0	1	0	0	1	128
04:45 PM	2	41	4	0	47	4	1	3	0	8	3	62	1	0	66	4	0	1	0	5	126
Total	7	152	21	0	180	19	9	12	0	40	23	225	12	0	260	12	3	2	0	17	497
05:00 PM	0	34	10	0	44	4	2	5	0	11	7	71	5	0	83	3	3	2	0	8	146
05:15 PM	2	42	2	0	46	6	1	4	0	11	10	71	5	1	87	3	1	1	0	5	149
05:30 PM	2	24	6	0	32	5	1	4	0	10	9	65	4	0	78	2	3	1	0	6	126
05:45 PM	2	32	1	0	35	6	0	6	0	12	4	60	5	0	69	2	0	1	0	3	119
Total	6	132	19	0	157	21	4	19	0	44	30	267	19	1	317	10	7	5	0	22	540
Grand Total	22	536	67	0	625	80	18	76	0	174	96	830	48	1	975	32	18	14	0	64	1838
Apprch %	3.5	85.8	10.7	0		46	10.3	43.7	0		9.8	85.1	4.9	0.1		50	28.1	21.9	0		
Total %	1.2	29.2	3.6	0	34	4.4	1	4.1	0	9.5	5.2	45.2	2.6	0.1	53	1.7	1	0.8	0	3.5	
CARS	22	518	64	0	604	79	17	76	0	172	94	814	48	1	957	32	18	14	0	64	1797
% CARS	100	96.6	95.5	0	96.6	98.8	94.4	100	0	98.9	97.9	98.1	100	100	98.2	100	100	100	0	100	97.8
TRUCKS	0	18	3	0	21	1	1	0	0	2	2	16	0	0	18	0	0	0	0	0	41
% TRUCKS	0	3.4	4.5	0	3.4	1.2	5.6	0	0	1.1	2.1	1.9	0	0	1.8	0	0	0	0	0	2.2

Stephen G. Pernaw & Company, Inc.  
P.O. Box 1721  
Concord, New Hampshire 03302

Weather: Clear  
Collected By: MV  
Job Number: 2003A  
Town/State: Allenstown, NH

File Name : 2003A\_INT\_B\_PM Main-Ferry  
Site Code : 2003A  
Start Date : 3/11/2020  
Page No : 2





Stephen G. Pernaw & Company, Inc.  
P.O. Box 1721  
Concord, New Hampshire 03302

Weather: Clear  
Collected By: MV  
Job Number: 2003A  
Town/State: Allenstown, NH

File Name : 2003A\_INT\_B\_PM Main-Ferry  
Site Code : 2003A  
Start Date : 3/11/2020  
Page No : 1

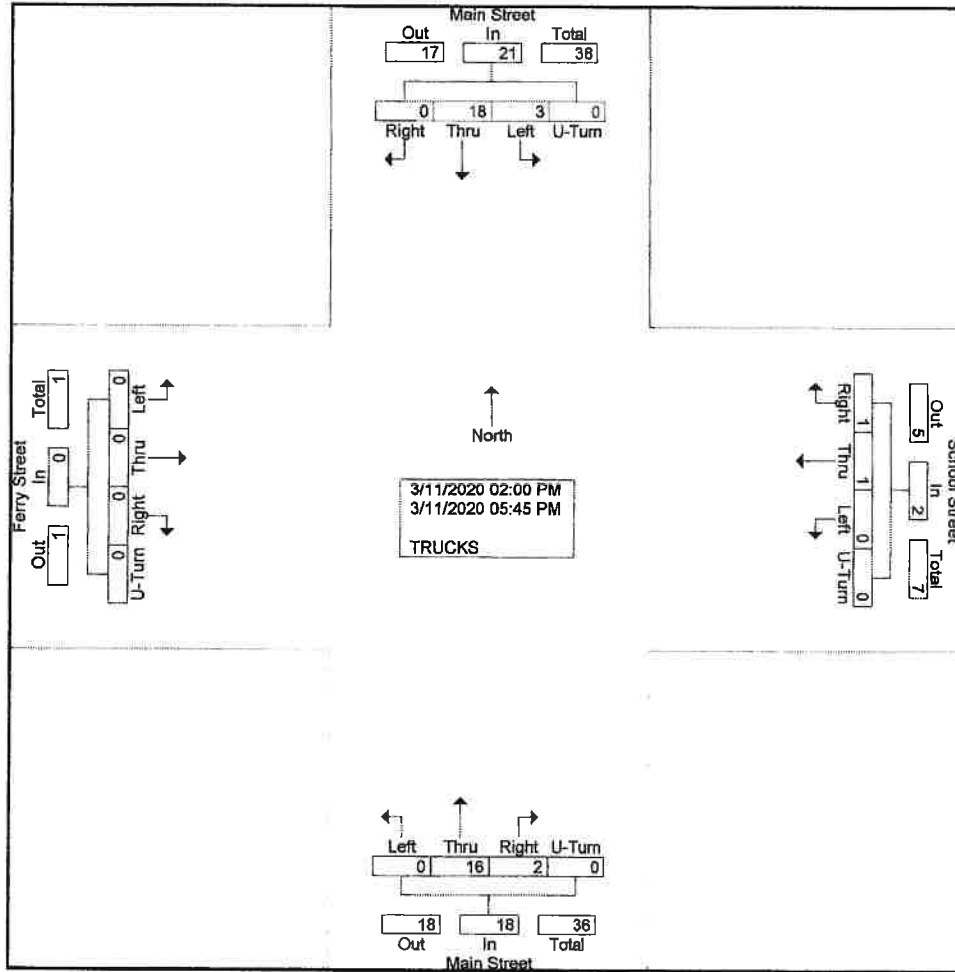
Groups Printed- TRUCKS

Start Time	Main Street From North					School Street From East					Main Street From South					Ferry Street From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
02:00 PM	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0
02:15 PM	0	4	2	0	6	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0
02:30 PM	0	3	0	0	3	0	0	0	0	0	2	2	0	0	4	0	0	0	0	0	0
02:45 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	9	2	0	11	0	0	0	0	0	2	7	0	0	9	0	0	0	0	0	20
03:00 PM	0	1	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
03:15 PM	0	0	0	0	0	1	0	0	0	1	0	2	0	0	2	0	0	0	0	0	3
03:30 PM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
03:45 PM	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
<b>Total</b>	0	4	1	0	5	1	0	0	0	1	0	3	0	0	3	0	0	0	0	0	9
04:00 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	3
04:45 PM	0	0	0	0	0	0	1	0	0	1	0	2	0	0	2	0	0	0	0	0	3
<b>Total</b>	0	3	0	0	3	0	1	0	0	1	0	3	0	0	3	0	0	0	0	0	7
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	2
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
<b>Total</b>	0	2	0	0	2	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	5
<b>Grand Total</b>	0	18	3	0	21	1	1	0	0	2	2	16	0	0	18	0	0	0	0	0	41
<b>Apprch %</b>	0	85.7	14.3	0		50	50	0	0		11.1	88.9	0	0		0	0	0	0		
<b>Total %</b>	0	43.9	7.3	0	51.2	2.4	2.4	0	0	4.9	4.9	39	0	0	43.9	0	0	0	0	0	

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Concord, New Hampshire 03302

Weather: Clear  
Collected By: MV  
Job Number: 2003A  
Town/State: Allenstown, NH

File Name : 2003A\_INT\_B\_PM Main-Ferry  
Site Code : 2003A  
Start Date : 3/11/2020  
Page No : 2

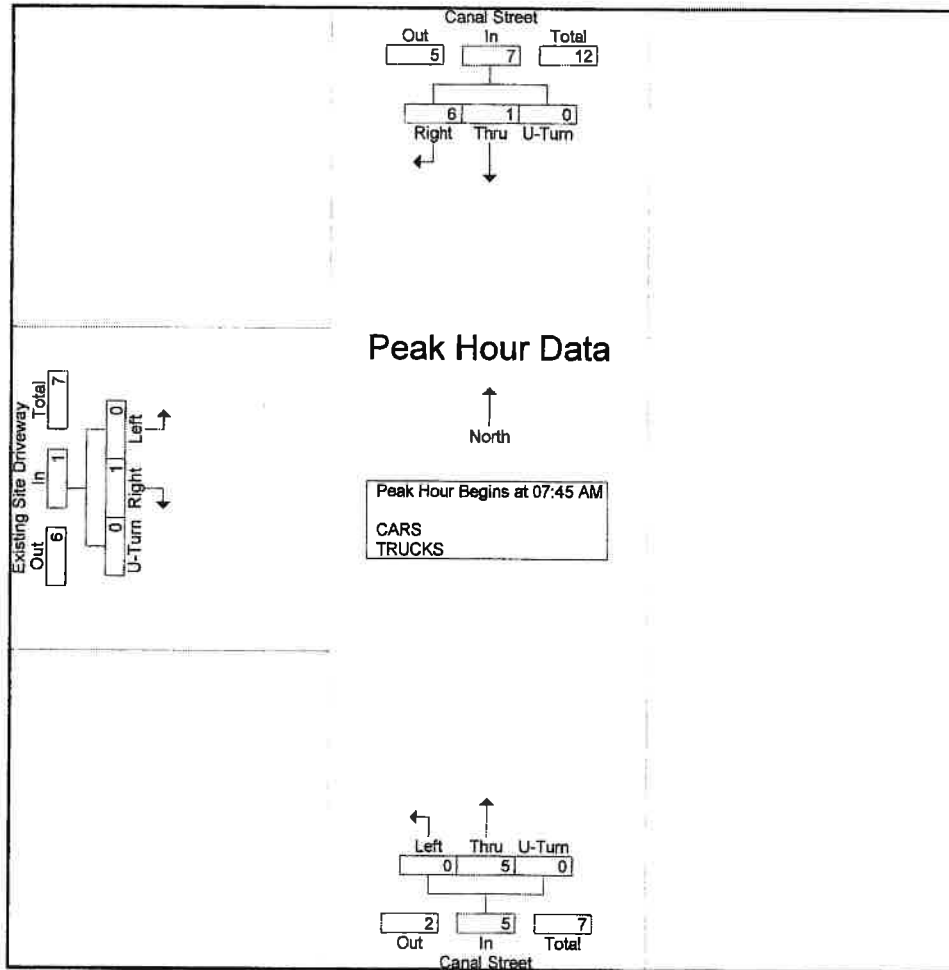


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P.O. Box 1721  
Concord, New Hampshire 03302

Weather: Clear  
Collected By: MV  
Job Number: 2003A  
Town/State: Allenstown, NH

File Name : 2003A\_INT\_C\_AM Canal-Site Driveway  
Site Code : 2003A  
Start Date : 3/12/2020  
Page No : 2

Start Time	Canal Street From North				Canal Street From South				Existing Site Driveway From West				Int. Total
	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	
Peak Hour Analysis From 07:00 AM to 09:00 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:45 AM													
07:45 AM	2	0	0	2	2	0	0	2	0	0	0	0	4
08:00 AM	1	0	0	1	1	0	0	1	0	0	0	0	2
08:15 AM	2	1	0	3	0	0	0	0	0	0	0	0	3
08:30 AM	1	0	0	1	2	0	0	2	1	0	0	1	4
Total Volume	6	1	0	7	5	0	0	5	1	0	0	1	13
% App. Total	85.7	14.3	0		100	0	0		100	0	0		
PHF	.750	.250	.000	.583	.625	.000	.000	.625	.250	.000	.000	.250	.813

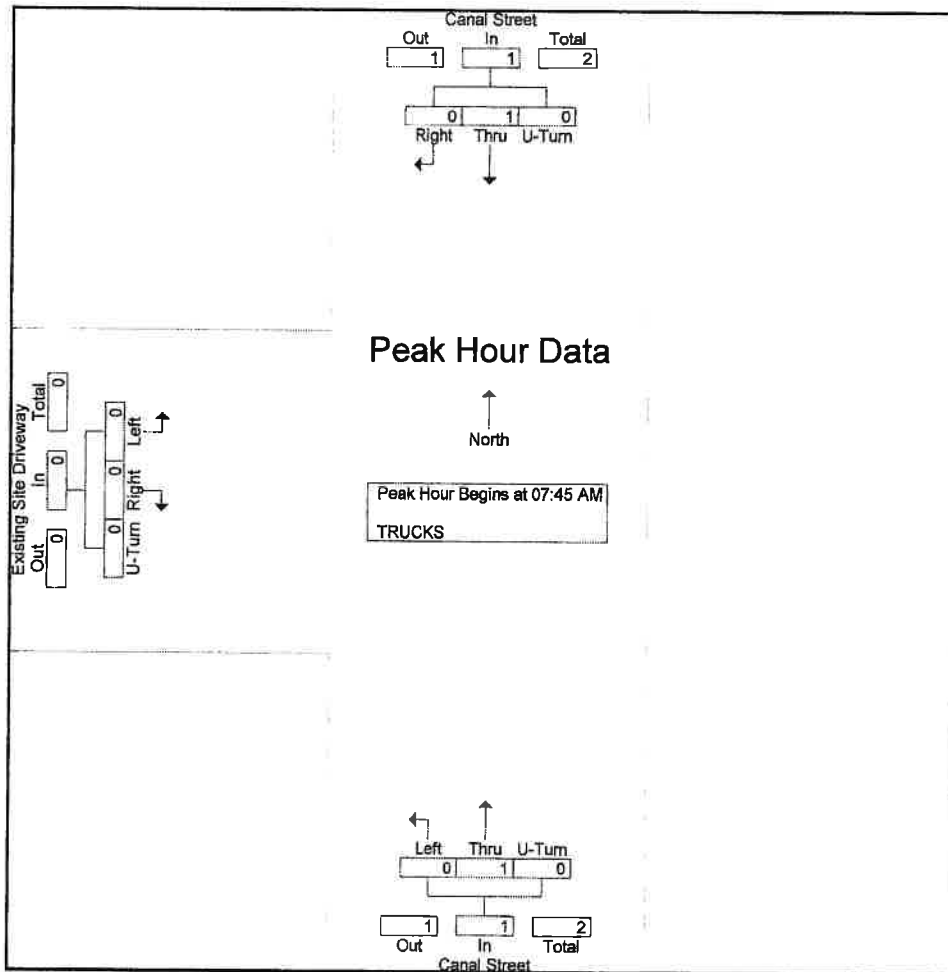


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Weather: Clear  
Collected By: MV  
Job Number: 2003A  
Town/State: Allenstown, NH

File Name : 2003A\_INT\_C\_AM Canal-Site Driveway  
Site Code : 2003A  
Start Date : 3/12/2020  
Page No : 2

Start Time	Canal Street From North				Canal Street From South				Existing Site Driveway From West				Int. Total
	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	
Peak Hour Analysis From 07:45 AM to 08:30 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:45 AM													
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	1	0	1	0	0	0	0	0	0	0	0	1
08:30 AM	0	0	0	0	1	0	0	1	0	0	0	0	1
Total Volume	0	1	0	1	1	0	0	1	0	0	0	0	2
% App. Total	0	100	0		100	0	0		0	0	0		
PHF	.000	.250	.000	.250	.250	.000	.000	.250	.000	.000	.000	.000	.500





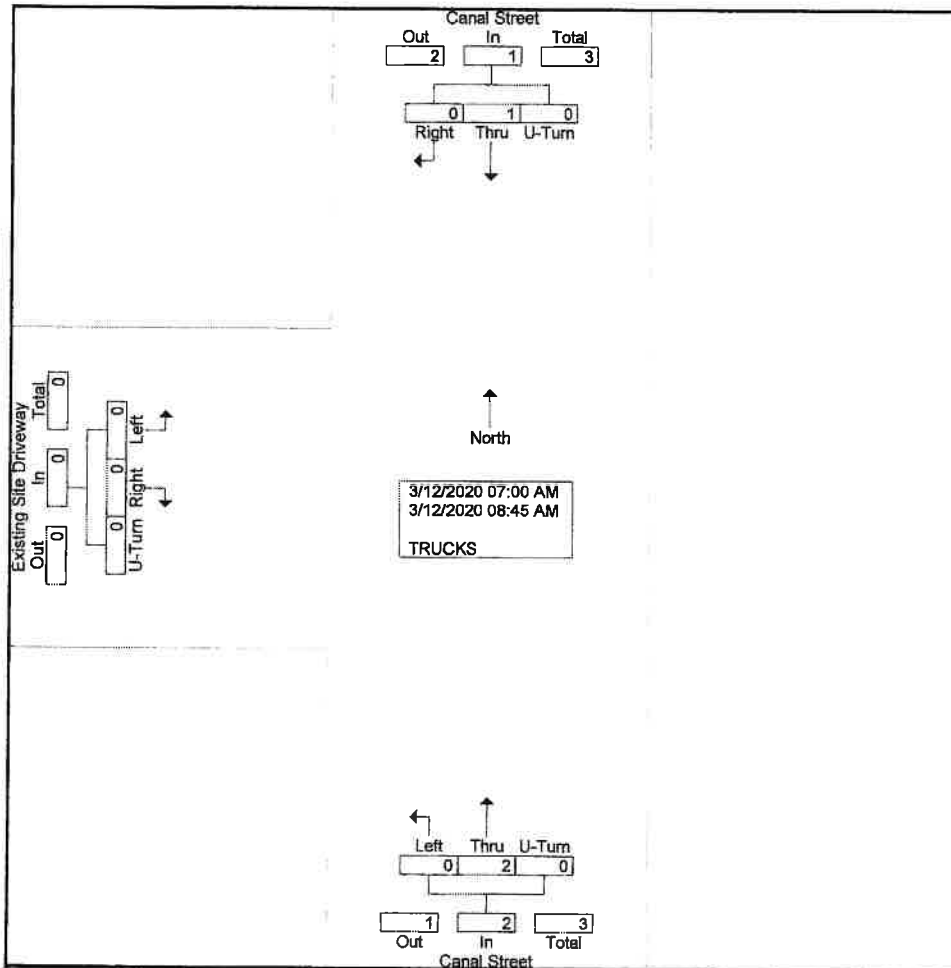
Stephen G. Pernaw & Company, Inc.  
P.O. Box 1721  
Concord, New Hampshire 03302

Weather: Clear  
Collected By: MV  
Job Number: 2003A  
Town/State: Allenstown, NH

File Name : 2003A\_INT\_C\_AM Canal-Site Driveway  
Site Code : 2003A  
Start Date : 3/12/2020  
Page No : 1

Groups Printed- TRUCKS

Start Time	Canal Street From North				Canal Street From South				Existing Site Driveway From West				Int. Total
	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	1	0	0	1	0	0	0	0	1
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	1	0	0	1	0	0	0	0	1
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	1	0	1	0	0	0	0	0	0	0	0	1
08:30 AM	0	0	0	0	1	0	0	1	0	0	0	0	1
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	1	1	0	0	1	0	0	0	0	2
Grand Total	0	1	0	1	2	0	0	2	0	0	0	0	3
Apprch %	0	100	0		100	0	0		0	0	0	0	
Total %	0	33.3	0	33.3	66.7	0	0	66.7	0	0	0	0	

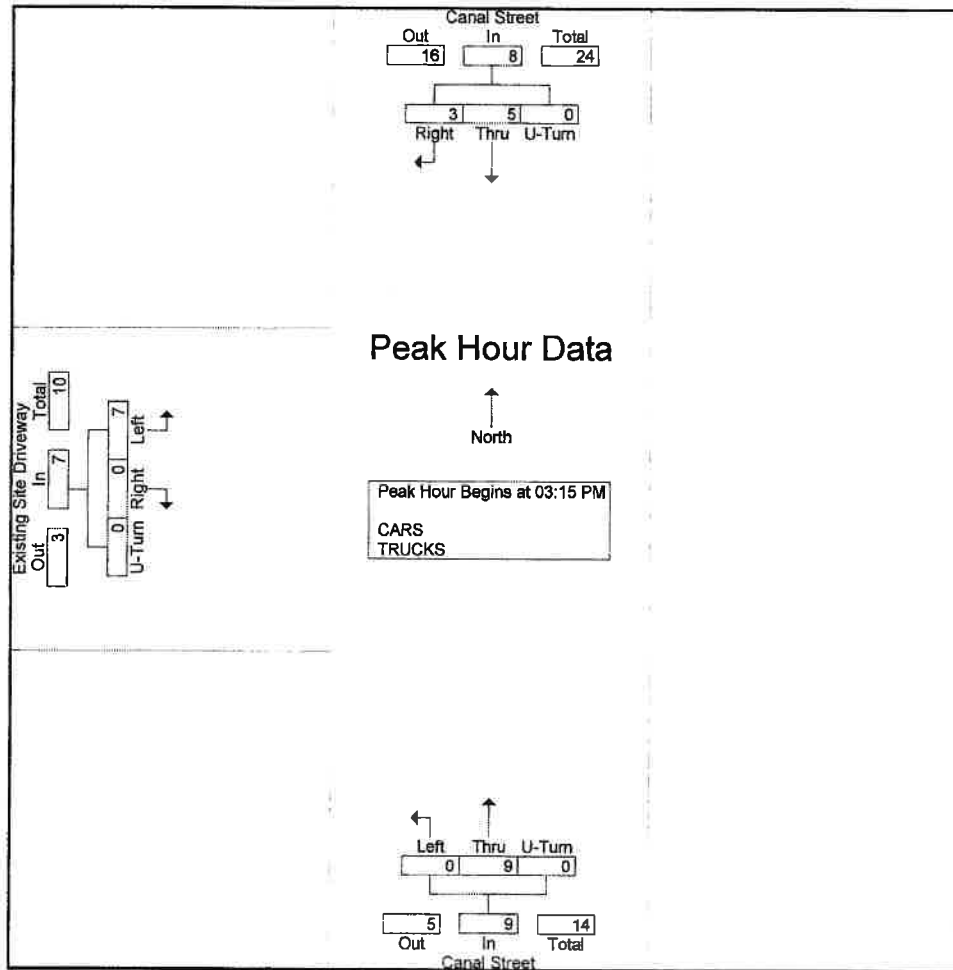


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Concord, New Hampshire 03302

Weather: Clear  
Collected By: MV  
Job Number: 2003A  
Town/Stae: Allenstown, NH

File Name : 2003A\_INT\_C\_PM Canal-Site Driveway  
Site Code : 2003A  
Start Date : 3/11/2020  
Page No : 3

Start Time	Canal Street From North				Canal Street From South				Existing Site Driveway From West				Int. Total
	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	
Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 03:15 PM													
03:15 PM	2	4	0	6	2	0	0	2	0	2	0	2	10
03:30 PM	1	1	0	2	2	0	0	2	0	4	0	4	8
03:45 PM	0	0	0	0	3	0	0	3	0	1	0	1	4
04:00 PM	0	0	0	0	2	0	0	2	0	0	0	0	2
Total Volume	3	5	0	8	9	0	0	9	0	7	0	7	24
% App. Total	37.5	62.5	0		100	0	0		0	100	0		
PHF	.375	.313	.000	.333	.750	.000	.000	.750	.000	.438	.000	.438	.600

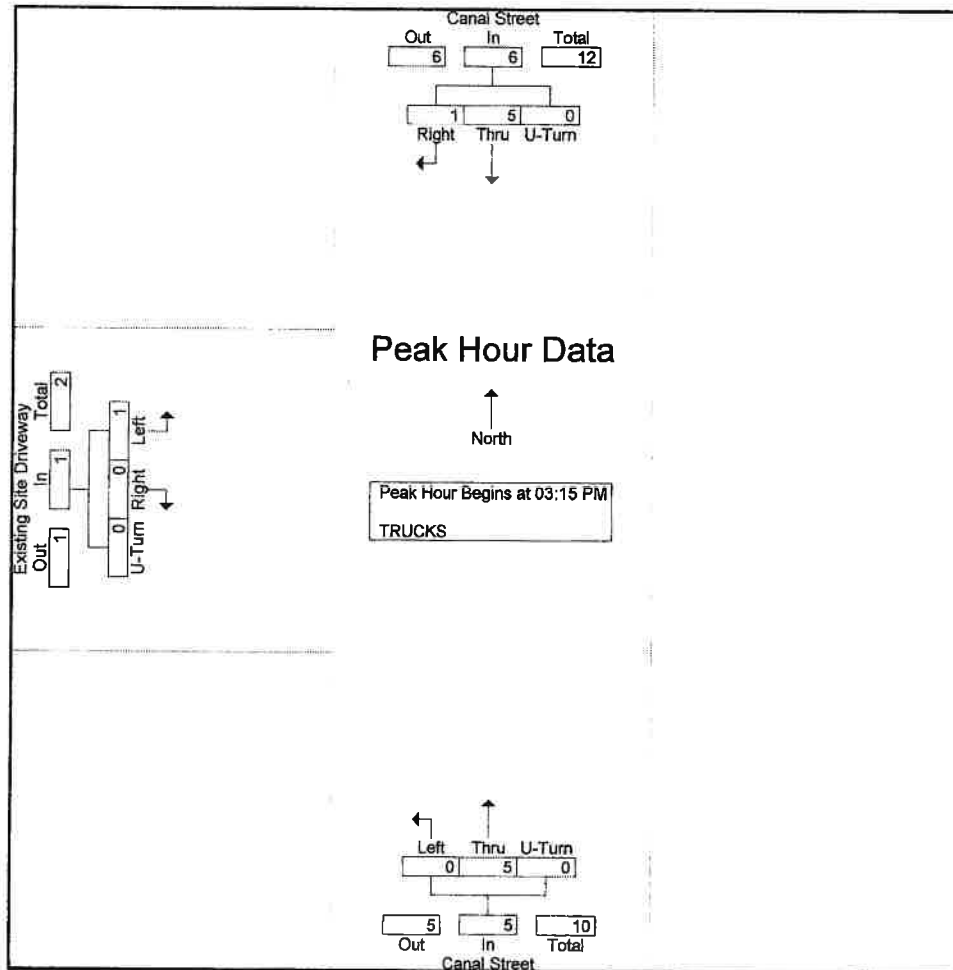


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Weather: Clear  
Collected By: MV  
Job Number: 2003A  
Town/Stae: Allenstown, NH

File Name : 2003A\_INT\_C\_PM Canal-Site Driveway  
Site Code : 2003A  
Start Date : 3/11/2020  
Page No : 3

Start Time	Canal Street From North				Canal Street From South				Existing Site Driveway From West				Int. Total
	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	
Peak Hour Analysis From 03:15 PM to 04:00 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 03:15 PM													
03:15 PM	0	4	0	4	0	0	0	0	0	0	0	0	4
03:30 PM	1	1	0	2	1	0	0	1	0	1	0	1	4
03:45 PM	0	0	0	0	3	0	0	3	0	0	0	0	3
04:00 PM	0	0	0	0	1	0	0	1	0	0	0	0	1
Total Volume	1	5	0	6	5	0	0	5	0	1	0	1	12
% App. Total	16.7	83.3	0		100	0	0		0	100	0		
PHF	.250	.313	.000	.375	.417	.000	.000	.417	.000	.250	.000	.250	.750





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Weather: Clear  
Collected By: MV  
Job Number: 2003A  
Town/Stae: Allenstown, NH

File Name : 2003A\_INT\_C\_PM Canal-Site Driveway  
Site Code : 2003A  
Start Date : 3/11/2020  
Page No : 1

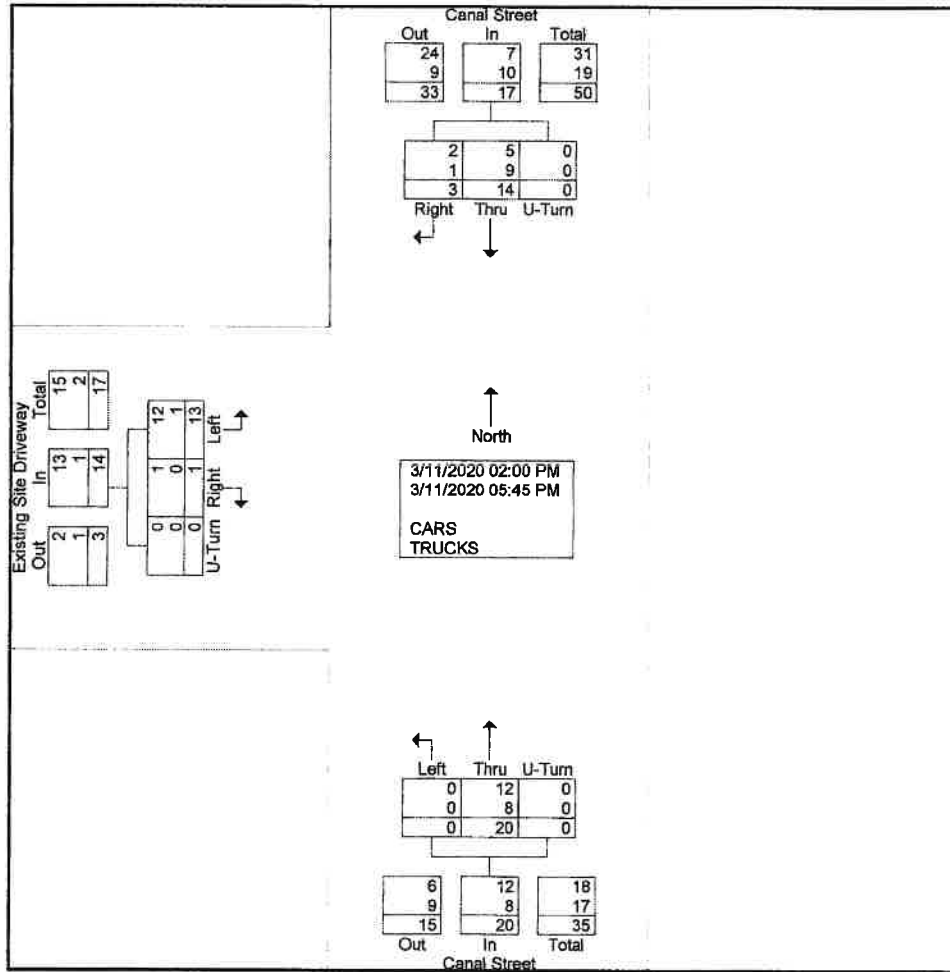
Groups Printed- CARS - TRUCKS

Start Time	Canal Street From North				Canal Street From South				Existing Site Driveway From West				Int. Total	
	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total		
02:00 PM	0	2	0	2	0	0	0	0	0	0	2	0	2	4
02:15 PM	0	1	0	1	1	0	0	1	0	0	0	0	0	2
02:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:45 PM	0	0	0	0	1	0	0	1	0	0	0	0	0	1
Total	0	3	0	3	2	0	0	2	0	2	0	2	0	7
03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:15 PM	2	4	0	6	2	0	0	2	0	2	0	2	0	10
03:30 PM	1	1	0	2	2	0	0	2	0	4	0	4	0	8
03:45 PM	0	0	0	0	3	0	0	3	0	1	0	1	0	4
Total	3	5	0	8	7	0	0	7	0	7	0	7	0	22
04:00 PM	0	0	0	0	2	0	0	2	0	0	0	0	0	2
04:15 PM	0	1	0	1	2	0	0	2	0	0	0	0	0	3
04:30 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	1
04:45 PM	0	3	0	3	1	0	0	1	0	0	0	0	0	4
Total	0	4	0	4	5	0	0	5	0	1	0	1	0	10
05:00 PM	0	0	0	0	1	0	0	1	1	2	0	3	0	4
05:15 PM	0	0	0	0	1	0	0	1	0	0	0	0	0	1
05:30 PM	0	1	0	1	1	0	0	1	0	0	0	0	0	2
05:45 PM	0	1	0	1	3	0	0	3	0	1	0	1	0	5
Total	0	2	0	2	6	0	0	6	1	3	0	4	0	12
Grand Total	3	14	0	17	20	0	0	20	1	13	0	14	0	51
Apprch %	17.6	82.4	0		100	0	0		7.1	92.9	0		0	
Total %	5.9	27.5	0	33.3	39.2	0	0	39.2	2	25.5	0	27.5	0	
CARS	2	5	0	7	12	0	0	12	1	12	0	13	0	32
% CARS	66.7	35.7	0	41.2	60	0	0	60	100	92.3	0	92.9	0	62.7
TRUCKS	1	9	0	10	8	0	0	8	0	1	0	1	0	19
% TRUCKS	33.3	64.3	0	58.8	40	0	0	40	0	7.7	0	7.1	0	37.3

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Concord, New Hampshire 03302

Weather: Clear  
Collected By: MV  
Job Number: 2003A  
Town/Stae: Allenstown, NH

File Name : 2003A\_INT\_C\_PM Canal-Site Driveway  
Site Code : 2003A  
Start Date : 3/11/2020  
Page No : 2



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Weather: Clear  
Collected By: MV  
Job Number: 2003A  
Town/Stae: Allenstown, NH

File Name : 2003A\_INT\_C\_PM Canal-Site Driveway  
Site Code : 2003A  
Start Date : 3/11/2020  
Page No : 1

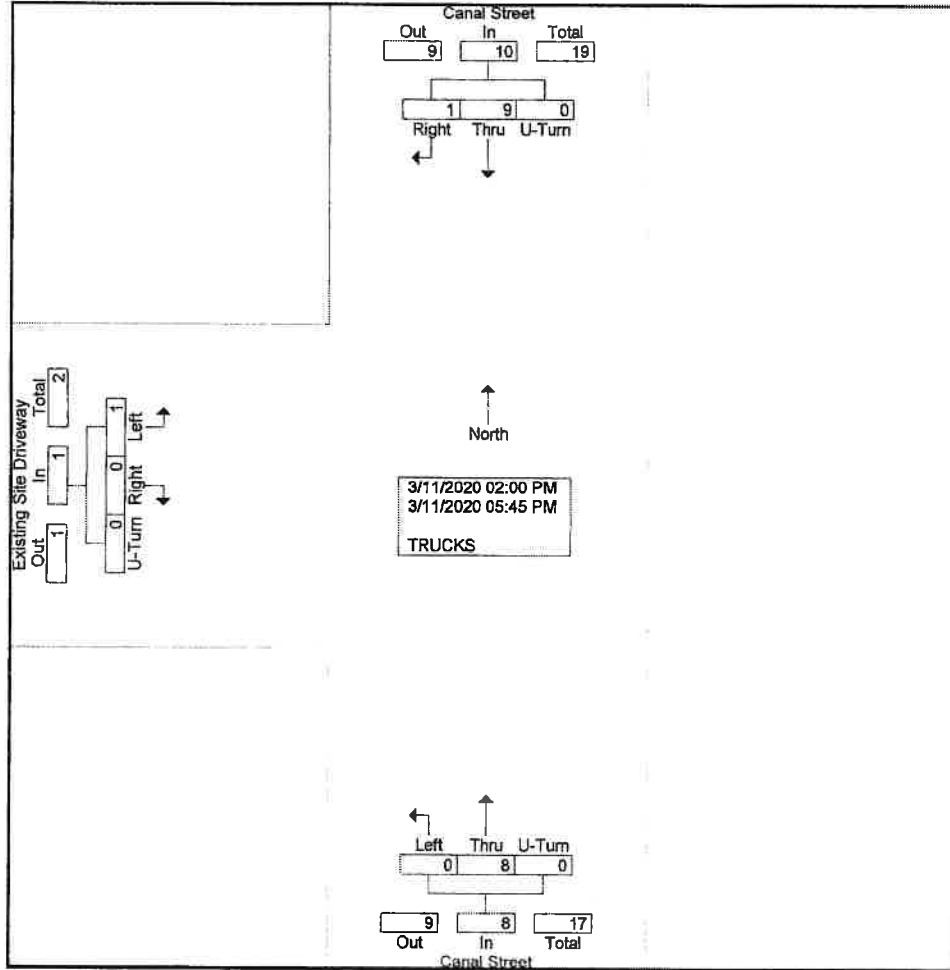
Groups Printed- TRUCKS

Start Time	Canal Street From North				Canal Street From South				Existing Site Driveway From West				Int. Total	
	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total		
02:00 PM	0	1	0	1	0	0	0	0	0	0	0	0	0	1
02:15 PM	0	1	0	1	1	0	0	1	0	0	0	0	0	2
02:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:45 PM	0	0	0	0	1	0	0	1	0	0	0	0	0	1
Total	0	2	0	2	2	0	0	2	0	0	0	0	0	4
03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:15 PM	0	4	0	4	0	0	0	0	0	0	0	0	0	4
03:30 PM	1	1	0	2	1	0	0	1	0	1	0	1	1	4
03:45 PM	0	0	0	0	3	0	0	3	0	0	0	0	0	3
Total	1	5	0	6	4	0	0	4	0	1	0	1	1	11
04:00 PM	0	0	0	0	1	0	0	1	0	0	0	0	0	1
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	1	0	1	0	0	0	0	0	0	0	0	0	1
Total	0	1	0	1	1	0	0	1	0	0	0	0	0	2
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	1	0	0	1	0	0	0	0	0	1
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	1	0	1	0	0	0	0	0	0	0	0	0	1
Total	0	1	0	1	1	0	0	1	0	0	0	0	0	2
Grand Total	1	9	0	10	8	0	0	8	0	1	0	1	1	19
Apprch %	10	90	0		100	0	0		0	100	0			
Total %	5.3	47.4	0	52.6	42.1	0	0	42.1	0	5.3	0	5.3		

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Weather: Clear  
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Job Number: 2003A  
Town/Stae: Allenstown, NH

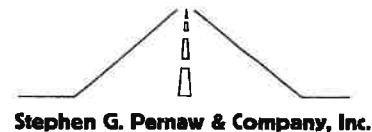
File Name : 2003A\_INT\_C\_PM Canal-Site Driveway  
Site Code : 2003A  
Start Date : 3/11/2020  
Page No : 2



**Appendix D**

**Seasonal Adjustment Factor / Historical Growth Rate**

**Seasonal Adjustment Factors  
NHDOT Group 4 (Urban Highways)**



**Year 2018 Monthly Data - Urban**

<u>Month</u>	ADT	Adjustment to	
		Average	Peak
Jan	11,282	1.13	1.24
Feb	11,848	1.08	1.18
Mar	11,828	1.08	<b>1.18</b>
Apr	12,491	1.02	1.12
May	13,587	0.94	1.03
Jun	13,911	0.92	1.00
Jul	13,765	0.93	1.01
Aug	13,945	0.92	1.00
Sep	13,168	0.97	1.06
Oct	13,367	0.96	1.04
Nov	12,215	1.05	1.14
Dec	11,963	1.07	1.17

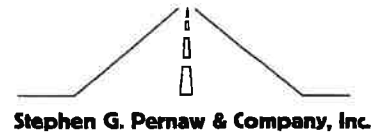
**Year 2017 Monthly Data - Urban**

<u>Month</u>	ADT	Adjustment to	
		Average	Peak
Jan	12254	1.21	1.33
Feb	13494	1.10	1.21
Mar	14335	1.03	<b>1.14</b>
Apr	15004	0.99	1.09
May	15547	0.95	1.05
Jun	16310	0.91	1.00
Jul	15523	0.95	1.05
Aug	15974	0.93	1.02
Sep	15546	0.95	1.05
Oct	15104	0.98	1.08
Nov	14544	1.02	1.12
Dec	14151	1.05	1.15

**Year 2016 Monthly Data - Urban**

<u>Month</u>	ADT	Adjustment to	
		Average	Peak
Jan	13573	1.16	1.25
Feb	14038	1.12	1.21
Mar	15731	1.00	<b>1.08</b>
Apr	16139	0.97	1.05
May	15705	1.00	1.08
Jun	16766	0.94	1.01
Jul	15752	1.00	1.08
Aug	16529	0.95	1.03
Sep	17007	0.92	1.00
Oct	16598	0.94	1.02
Nov	15649	1.00	1.09
Dec	14638	1.07	1.16

**Average Peak-Month Factor 1.13**



STEPHEN G. PERNAW & COMPANY, INC.  
 PROJECT: 25 Canal Street, Allentown  
 NUMBER: 2003A  
 COUNT STATION: 82361066

### HISTORICAL GROWTH CALCULATIONS

LOCATION : Main Street (over Suncook River)  
 CASE : AADT

### ARITHMETIC PROJECTIONS

YEAR	AADT	Regression Output:		PROJECTIONS	
2015	4429 ✓	Constant	-83821.4	2019	4611
2016	4518 ✓	Std Err of Y Est	35.243912	2020	4655
2017	4478 ✓	R Squared	0.8373518	2021	4698
2018	4568 ✓	No. of Observations	5	2022	4742
2019	4623 ✓	Degrees of Freedom	3	2023	4786
		X Coefficient	43.8	2024	4830
		Std Err of Coef.	11.145104	2025	4874
				2026	4917
				2027	4961
				2028	5005
				2029	5049

RATE = 44 VPD/YEAR

### GEOMETRIC PROJECTIONS

YEAR	AADT	Ln AADT	Regression Output:		PROJECTIONS	
2015	4429	8.39593	Constant	-11.09682	2019	4611
2016	4518	8.41582	Std Err of Y Est	0.0077997	2020	4656
2017	4478	8.40693	R Squared	0.8368294	2021	4701
2018	4568	8.42683	No. of Observations	5	2022	4747
2019	4623	8.43880	Degrees of Freedom	3	2023	4793
			X Coefficient	0.0096746	2024	4840
			Std Err of Coef.	0.0024665	2025	4887
					2026	4934
					2027	4982
					2028	5031
					2029	5079

RATE = 1.0 % / YEAR

**Conclusion: Use 2.0% per year, compounded annually**



Transportation Data Management System

List View All DIRs

Record	4788	5743	5016 Rec	go
<b>Location ID</b>	82361066	<b>MPO ID</b>		
<b>Type</b>	SPOT	<b>HPMS ID</b>		
<b>On NHS</b>	No	<b>On HPMS</b>	No	
<b>LRS ID</b>	N3610045	<b>LRS Loc Pt.</b>		
<b>SF Group</b>	04	<b>Route Type</b>		
<b>AF Group</b>	04	<b>Route</b>		
<b>GF Group</b>	E	<b>Active</b>	Yes	
<b>Class Dist Grp</b>	Default	<b>Category</b>	3	
<b>Seas Clls Grp</b>	Default			
<b>WIM Group</b>	Default			
<b>QC Group</b>	Default			
<b>Funct'l Class</b>	Major Collector	<b>Milepost</b>		
<b>Located On</b>	Main St			
<b>Loc On Alias</b>	MAIN ST OVER SUNCOOK RIVER			
More Detail ▶				
STATION DATA				

Directions: 2-WAY

AADT

Year	AADT	DHV-30	K %	D %	PA	BC	Src
2019	4,623 <sup>3</sup>		11		4,235 (92%)	388 (8%)	Grown from 2018
2018	4,568 <sup>3</sup>		11		4,212 (92%)	356 (8%)	Grown from 2017
2017	4,478	507	11		4,158 (93%)	320 (7%)	
2016	4,518 <sup>3</sup>				4,120 (91%)	398 (9%)	Grown from 2015
2015	4,429 <sup>3</sup>						Grown from 2014

1-5 of 13

Model Year	Model AADT	AM PHV	AM PPV	MD PHV	MD PPV	PM PHV	PM PPV	NT PHV	NT PPV
------------	------------	--------	--------	--------	--------	--------	--------	--------	--------

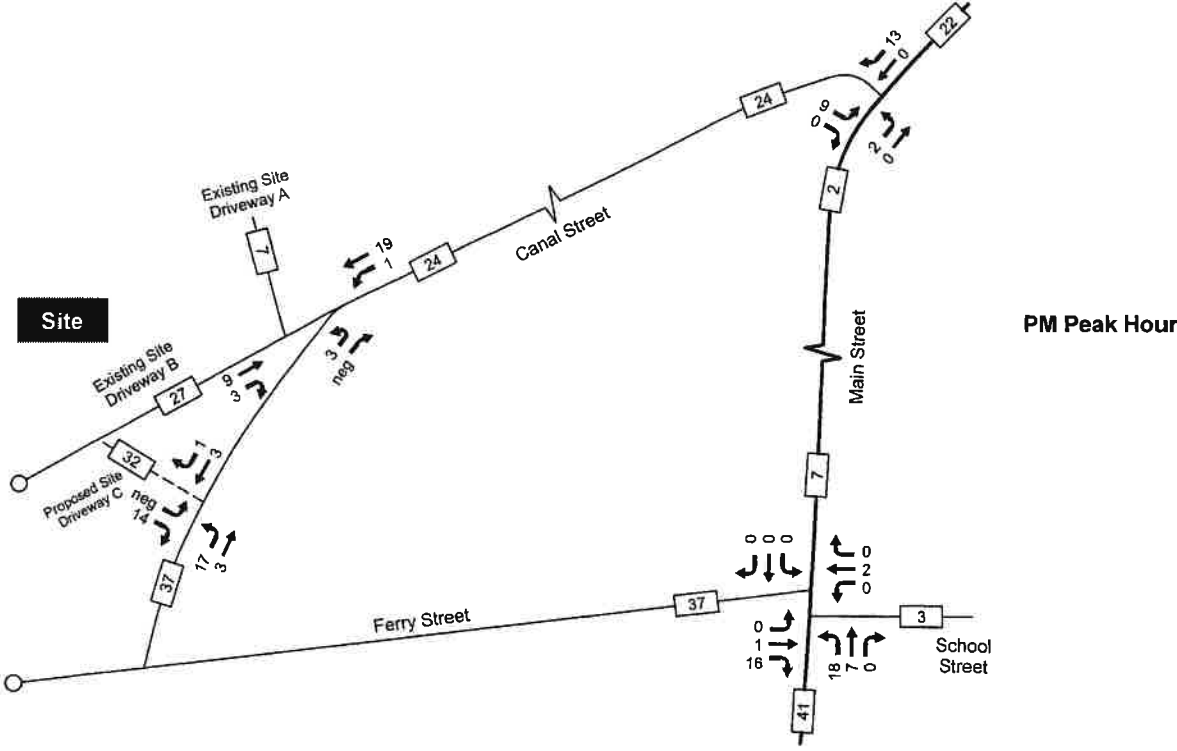
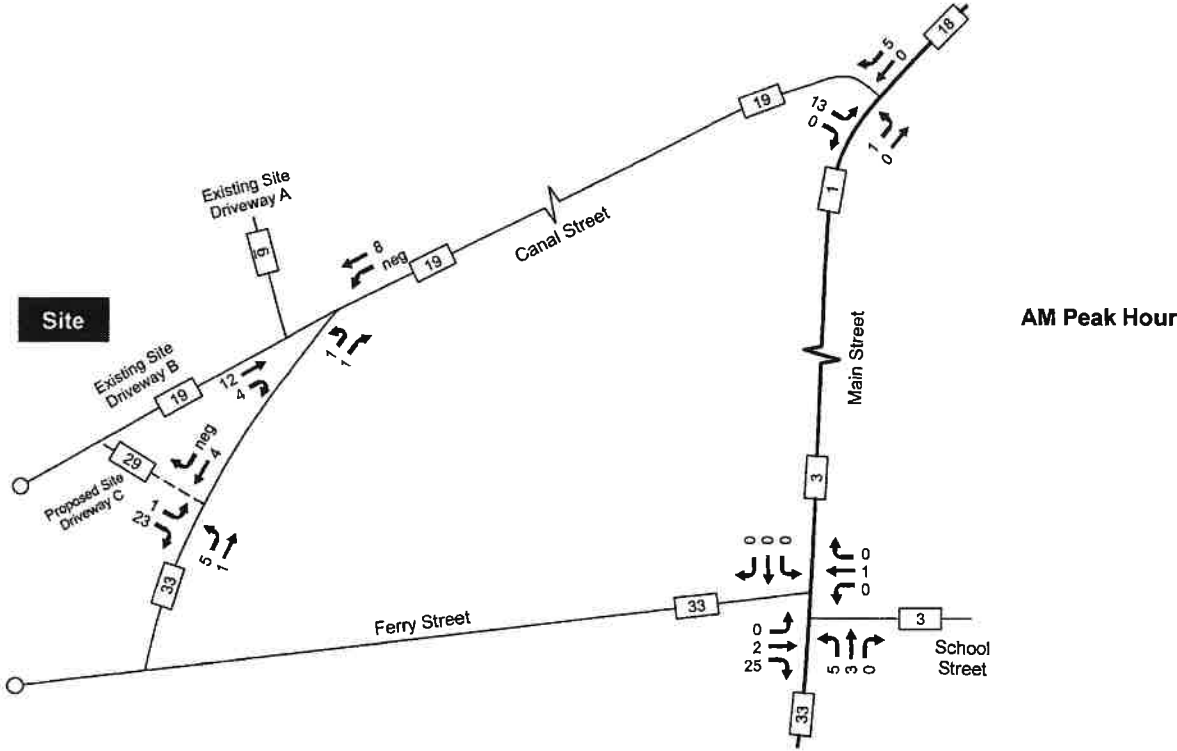
VOLUME COUNT			
Date	Int	Total	
Thu 9/28/2017	60	5,241	
Wed 9/27/2017	60	4,898	
Tue 9/26/2017	60	4,917	
Thu 9/11/2014	60	5,003	
Wed 9/10/2014	60	4,935	
Tue 9/9/2014	60	5,036	
Thu 7/14/2011	60	4,499	

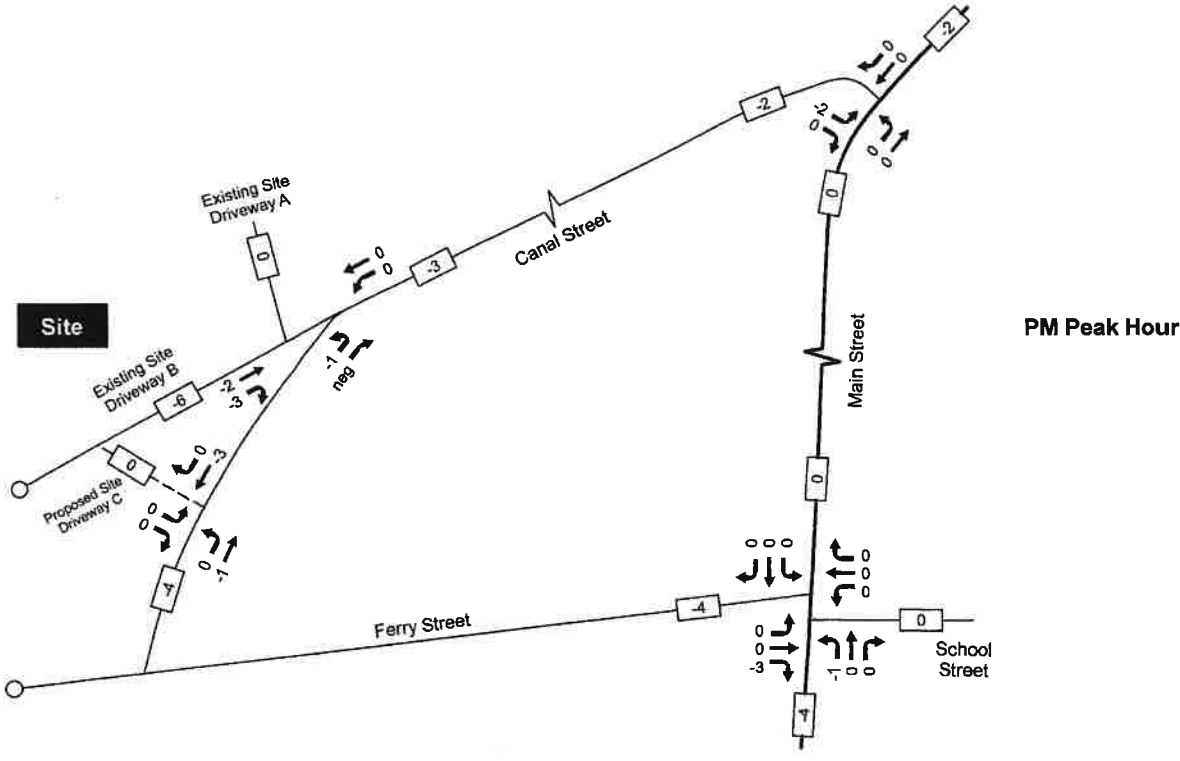
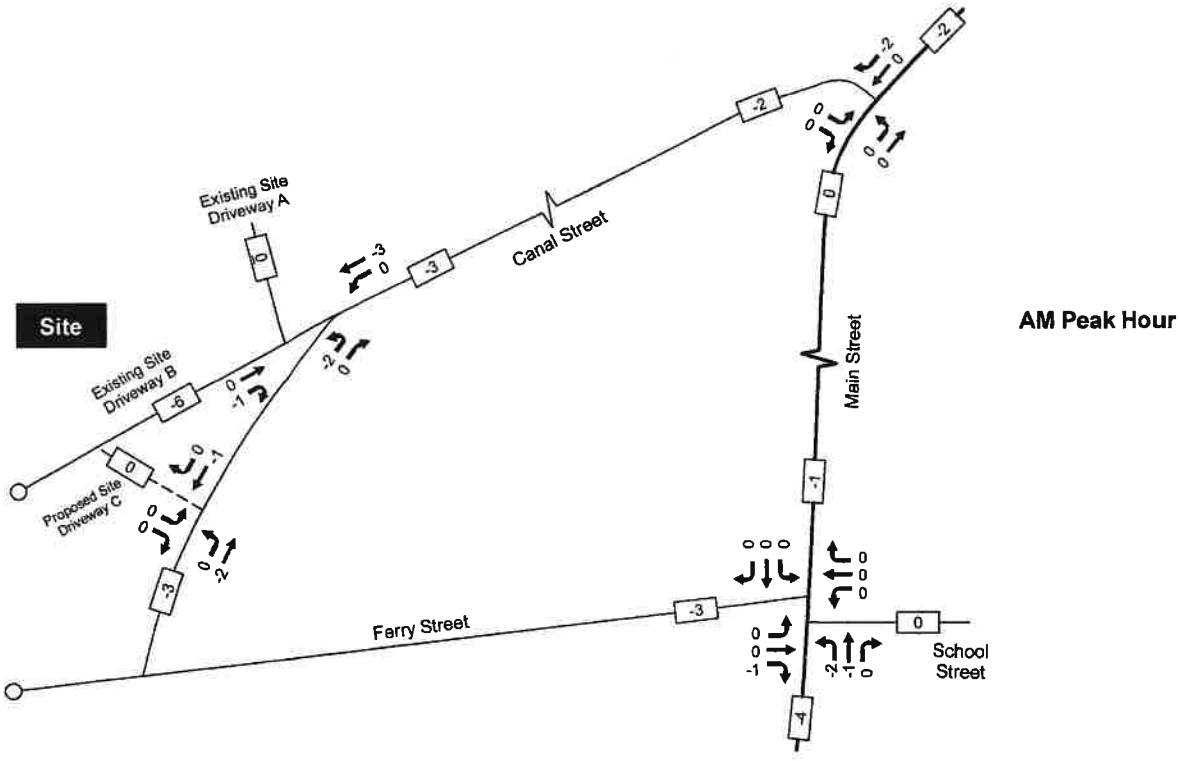
VOLUME TREND	
Year	Annual Growth
2019	1%
2018	2%
2017	-1%
2016	2%
2015	3%
2014	4%
2011	-8%



**Appendix E**

**Site Generated Traffic Volumes / Trip Distribution**





2003A



### Trip Generation Summary

Alternative: 25 Canal Street  
 Phase:  
 Project: 2003A

Open Date: 3/27/2020  
 Analysis Date: 3/27/2020

ITE	Land Use	Weekday Average Daily Trips			Weekday AM Peak Hour of Adjacent Street Traffic			Weekday PM Peak Hour of Adjacent Street Traffic		
		* Enter	Exit	Total	* Enter	Exit	Total	* Enter	Exit	Total
221	MID-RISE 1	408	408	816	14	40	54	40	26	66
	150 Dwelling Units									
110	GINDUSTRIAL 1	19	18	37	5	1	6	1	5	6
12	Employees (SUBTRACT)									
	Unadjusted Volume	427	426	853	19	41	60	41	31	72
	Internal Capture Trips	0	0	0	0	0	0	0	0	0
	Pass-By Trips	0	0	0	0	0	0	0	0	0
	Volume Added to Adjacent Streets	427	426	853	19	41	60	41	31	72

Total Weekday Average Daily Trips Internal Capture = 0 Percent  
 Total Weekday AM Peak Hour of Adjacent Street Traffic Internal Capture = 0 Percent  
 Total Weekday PM Peak Hour of Adjacent Street Traffic Internal Capture = 0 Percent

\* - Custom rate used for selected time period.

Location: Allenstown, New Hampshire  
 Job Number: 2003A

**TRIP DISTRIBUTION ANALYSIS**  
**Work Destination Report - Where Workers are Employed Who Live in the Selection Area - by County Subdivisions**

Total All Jobs	Count	Gateway %			Gateway Allocation		
		Main N	Main S	School E	Main N	Main S	School E
Jobs Counts by County Subdivisions Where Workers are Employed - All Jobs							
Manchester city (Hillsborough, NH)	456		1.00		0	456	0
Concord city (Merrimack, NH)	410	1.00			410	0	0
Hooksett town (Merrimack, NH)	187		1.00		0	187	0
Pembroke town (Merrimack, NH)	96	0.75		0.25	72	0	24
Bedford town (Hillsborough, NH)	88		1.00		0	88	0
Nashua city (Hillsborough, NH)	79		1.00		0	79	0
Allenstown town (Merrimack, NH)	73		0.25	0.75	0	18	55
Londonderry town (Rockingham, NH)	71		1.00		0	71	0
Bow town (Merrimack, NH)	50	0.50			25	25	0
Merrimack town (Hillsborough, NH)	40		1.00		0	40	0
	1550				507	964	79
					32.7%	62.2%	5.1%
					100%		
					33	62	5
							100

**Appendix F Capacity and Level of Service Calculations – Unsignalized**

HCM 2010 TWSC

1: South Main Street/Main Street & Ferry Street/School Street

Intersection

Int Delay, s/veh 4.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	8 ✓	8 ✓	14 ✓	46 ✓	3 ✓	21 ✓	5 ✓	115 ✓	18 ✓	13 ✓	268 ✓	3 ✓
Future Vol, veh/h	8	8	14	46	3	21	5	115	18	13	268	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	68	68	68	49	49	49	93	93	93	87	87	87
Heavy Vehicles, %	0	13	0	2	0	0	20	3	0	0	3	0
Mvmt Flow	12	12	21	94	6	43	5	124	19	15	308	3

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	508	493	310	500	485	134	311	0	0	143	0	0
Stage 1	340	340	-	144	144	-	-	-	-	-	-	-
Stage 2	168	153	-	356	341	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.63	6.2	7.12	6.5	6.2	4.3	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.63	-	6.12	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.63	-	6.12	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.117	3.3	3.518	4	3.3	2.38	-	-	2.2	-	-
Pot Cap-1 Maneuver	479	461	735	481	485	920	1154	-	-	1452	-	-
Stage 1	679	620	-	859	782	-	-	-	-	-	-	-
Stage 2	839	750	-	661	642	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	446	453	735	452	477	920	1154	-	-	1452	-	-
Mov Cap-2 Maneuver	446	453	-	452	477	-	-	-	-	-	-	-
Stage 1	676	613	-	855	778	-	-	-	-	-	-	-
Stage 2	790	746	-	623	634	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.1	14.2	0.3	0.3
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1154	-	-	549	535	1452	-	-
HCM Lane V/C Ratio	0.005	-	-	0.08	0.267	0.01	-	-
HCM Control Delay (s)	8.1	0	-	12.1	14.2	7.5	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.3	1.1	0	-	-

# HCM 2010 TWSC

## 1: South Main Street/Main Street & Ferry Street/School Street

### Intersection

Int Delay, s/veh 4.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	9 ✓	9 ✓	16 ✓	53 ✓	3 ✓	24 ✓	6 ✓	133 ✓	21 ✓	15 ✓	309 ✓	3 ✓
Future Vol, veh/h	9	9	16	53	3	24	6	133	21	15	309	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	68	68	68	49	49	49	93	93	93	87	87	87
Heavy Vehicles, %	0	13	0	2	0	0	20	3	0	0	3	0
Mvmt Flow	13	13	24	108	6	49	6	143	23	17	355	3

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	585	569	357	576	559	155	358	0	0	166	0	0
Stage 1	391	391	-	167	167	-	-	-	-	-	-	-
Stage 2	194	178	-	409	392	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.63	6.2	7.12	6.5	6.2	4.3	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.63	-	6.12	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.63	-	6.12	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.117	3.3	3.518	4	3.3	2.38	-	-	2.2	-	-
Pot Cap-1 Maneuver	425	417	692	428	440	896	1108	-	-	1424	-	-
Stage 1	637	588	-	835	764	-	-	-	-	-	-	-
Stage 2	812	732	-	619	610	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	391	408	692	397	431	896	1108	-	-	1424	-	-
Mov Cap-2 Maneuver	391	408	-	397	431	-	-	-	-	-	-	-
Stage 1	633	579	-	830	759	-	-	-	-	-	-	-
Stage 2	757	728	-	576	601	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13	16.4	0.3	0.3
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1108	-	-	499	478	1424	-	-
HCM Lane V/C Ratio	0.006	-	-	0.1	0.342	0.012	-	-
HCM Control Delay (s)	8.3	0	-	13	16.4	7.6	0	-
HCM Lane LOS	A	A	-	B	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.3	1.5	0	-	-



# HCM 2010 TWSC

## 1: South Main Street/Main Street & Ferry Street/School Street

### Intersection

Int Delay, s/veh 5.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Vol, veh/h	9 ✓	11 ✓	40 ✓	53 ✓	4 ✓	24 ✓	9 ✓	135 ✓	21 ✓	15 ✓	309 ✓	3 ✓
Future Vol, veh/h	9	11	40	53	4	24	9	135	21	15	309	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	68	68	68	49	49	49	93	93	93	87	87	87
Heavy Vehicles, %	0	13	0	2	0	0	20	3	0	0	3	0
Mvmt Flow	13	16	59	108	8	49	10	145	23	17	355	3

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	596	579	357	605	569	157	358	0	0	168	0	0
Stage 1	391	391	-	177	177	-	-	-	-	-	-	-
Stage 2	205	188	-	428	392	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.63	6.2	7.12	6.5	6.2	4.3	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.63	-	6.12	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.63	-	6.12	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.117	3.3	3.518	4	3.3	2.38	-	-	2.2	-	-
Pot Cap-1 Maneuver	418	412	692	410	435	894	1108	-	-	1422	-	-
Stage 1	637	588	-	825	756	-	-	-	-	-	-	-
Stage 2	802	724	-	605	610	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	382	402	692	357	424	894	1108	-	-	1422	-	-
Mov Cap-2 Maneuver	382	402	-	357	424	-	-	-	-	-	-	-
Stage 1	631	579	-	817	748	-	-	-	-	-	-	-
Stage 2	742	717	-	530	601	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.8	18.1	0.5	0.3
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1108	-	-	552	438	1422	-	-
HCM Lane V/C Ratio	0.009	-	-	0.16	0.377	0.012	-	-
HCM Control Delay (s)	8.3	0	-	12.8	18.1	7.6	0	-
HCM Lane LOS	A	A	-	B	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.6	1.7	0	-	-

# HCM 2010 TWSC

## 1: South Main Street/Main Street & Ferry Street/School Street

### Intersection

Int Delay, s/veh 6.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	11 ✓	11 ✓	20 ✓	65 ✓	4 ✓	29 ✓	7 ✓	162 ✓	26 ✓	18 ✓	377 ✓	4 ✓
Future Vol, veh/h	11	11	20	65	4	29	7	162	26	18	377	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	68	68	68	49	49	49	93	93	93	87	87	87
Heavy Vehicles, %	0	13	0	2	0	0	20	3	0	0	3	0
Mvmt Flow	16	16	29	133	8	59	8	174	28	21	433	5

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	716	696	436	704	684	188	438	0	0	202	0	0
Stage 1	478	478	-	204	204	-	-	-	-	-	-	-
Stage 2	238	218	-	500	480	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.63	6.2	7.12	6.5	6.2	4.3	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.63	-	6.12	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.63	-	6.12	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.117	3.3	3.518	4	3.3	2.38	-	-	2.2	-	-
Pot Cap-1 Maneuver	348	352	625	352	374	859	1032	-	-	1382	-	-
Stage 1	572	537	-	798	737	-	-	-	-	-	-	-
Stage 2	770	703	-	553	558	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	311	342	625	316	363	859	1032	-	-	1382	-	-
Mov Cap-2 Maneuver	311	342	-	316	363	-	-	-	-	-	-	-
Stage 1	567	526	-	791	730	-	-	-	-	-	-	-
Stage 2	703	697	-	501	547	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	15	23.5	0.3	0.3
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1032	-	-	422	391	1382	-	-
HCM Lane V/C Ratio	0.007	-	-	0.146	0.512	0.015	-	-
HCM Control Delay (s)	8.5	0	-	15	23.5	7.6	0	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.5	2.8	0	-	-

# HCM 2010 TWSC

## 1: South Main Street/Main Street & Ferry Street/School Street

### Intersection

Int Delay, s/veh 7.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	11	13	44	65	5	29	10	164	26	18	337	4
Future Vol, veh/h	11	13	44	65	5	29	10	164	26	18	337	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	68	68	68	49	49	49	93	93	93	87	87	87
Heavy Vehicles, %	0	13	0	2	0	0	20	3	0	0	3	0
Mvmt Flow	16	19	65	133	10	59	11	176	28	21	387	5

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	679	658	390	686	646	190	392	0	0	204	0	0
Stage 1	432	432	-	212	212	-	-	-	-	-	-	-
Stage 2	247	226	-	474	434	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.63	6.2	7.12	6.5	6.2	4.3	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.63	-	6.12	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.63	-	6.12	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.117	3.3	3.518	4	3.3	2.38	-	-	2.2	-	-
Pot Cap-1 Maneuver	368	370	663	362	393	857	1075	-	-	1380	-	-
Stage 1	606	564	-	790	731	-	-	-	-	-	-	-
Stage 2	761	697	-	571	585	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	328	359	663	306	381	857	1075	-	-	1380	-	-
Mov Cap-2 Maneuver	328	359	-	306	381	-	-	-	-	-	-	-
Stage 1	599	553	-	781	722	-	-	-	-	-	-	-
Stage 2	690	689	-	488	574	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14	24.5	0.4	0.4
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1075	-	-	500	382	1380	-	-
HCM Lane V/C Ratio	0.01	-	-	0.2	0.529	0.015	-	-
HCM Control Delay (s)	8.4	0	-	14	24.5	7.6	0	-
HCM Lane LOS	A	A	-	B	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.7	3	0	-	-

# HCM 2010 TWSC

## 1: South Main Street/Main Street & Ferry Street/School Street

### Intersection

Int Delay, s/veh 2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	4	5	10	15	8	20	14	264	23	22	160	4
Future Vol, veh/h	4	5	10	15	8	20	14	264	23	22	160	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	59	59	59	83	83	83	87	87	87	95	95	95
Heavy Vehicles, %	0	0	0	0	13	0	0	1	0	0	3	0
Mvmt Flow	7	8	17	18	10	24	16	303	26	23	168	4

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	581	577	170	577	566	316	172	0	0	329	0	0
Stage 1	216	216	-	348	348	-	-	-	-	-	-	-
Stage 2	365	361	-	229	218	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.63	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.63	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.63	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4.117	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	428	430	879	431	419	729	1417	-	-	1242	-	-
Stage 1	791	728	-	672	615	-	-	-	-	-	-	-
Stage 2	658	629	-	778	703	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	396	415	879	406	405	729	1417	-	-	1242	-	-
Mov Cap-2 Maneuver	396	415	-	406	405	-	-	-	-	-	-	-
Stage 1	780	713	-	663	606	-	-	-	-	-	-	-
Stage 2	617	620	-	739	689	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.7	12.8	0.4	0.9
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1417	-	-	567	511	1242	-	-
HCM Lane V/C Ratio	0.011	-	-	0.057	0.101	0.019	-	-
HCM Control Delay (s)	7.6	0	-	11.7	12.8	8	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.3	0.1	-	-

# HCM 2010 TWSC

## 1: South Main Street/Main Street & Ferry Street/School Street

### Intersection

Int Delay, s/veh 2.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5 ✓	6 ✓	12 ✓	17 ✓	9 ✓	23 ✓	16 ✓	304 ✓	27 ✓	25 ✓	184 ✓	5 ✓
Future Vol, veh/h	5	6	12	17	9	23	16	304	27	25	184	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	59	59	59	83	83	83	87	87	87	95	95	95
Heavy Vehicles, %	0	0	0	0	13	0	0	1	0	0	3	0
Mvmt Flow	8	10	20	20	11	28	18	349	31	26	194	5

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	669	665	197	665	652	365	199	0	0	380	0	0
Stage 1	249	249	-	401	401	-	-	-	-	-	-	-
Stage 2	420	416	-	264	251	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.63	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.63	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.63	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4.117	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	374	383	849	376	373	685	1385	-	-	1190	-	-
Stage 1	759	704	-	630	582	-	-	-	-	-	-	-
Stage 2	615	595	-	746	679	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	340	367	849	348	357	685	1385	-	-	1190	-	-
Mov Cap-2 Maneuver	340	367	-	348	357	-	-	-	-	-	-	-
Stage 1	746	686	-	619	572	-	-	-	-	-	-	-
Stage 2	569	585	-	699	662	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.7	14.1	0.4	0.9
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1385	-	-	509	455	1190	-	-
HCM Lane V/C Ratio	0.013	-	-	0.077	0.13	0.022	-	-
HCM Control Delay (s)	7.6	0	-	12.7	14.1	8.1	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.4	0.1	-	-

# HCM 2010 TWSC

## 1: South Main Street/Main Street & Ferry Street/School Street

### Intersection

Int Delay, s/veh 2.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5 ✓	7 ✓	25 ✓	17 ✓	11 ✓	23 ✓	33 ✓	311 ✓	27 ✓	25 ✓	184 ✓	5 ✓
Future Vol, veh/h	5	7	25	17	11	23	33	311	27	25	184	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	59	59	59	83	83	83	87	87	87	95	95	95
Heavy Vehicles, %	0	0	0	0	13	0	0	1	0	0	3	0
Mvmt Flow	8	12	42	20	13	28	38	357	31	26	194	5

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	718	713	197	725	700	373	199	0	0	388	0	0
Stage 1	249	249	-	449	449	-	-	-	-	-	-	-
Stage 2	469	464	-	276	251	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.63	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.63	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.63	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4.117	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	347	360	849	343	350	678	1385	-	-	1182	-	-
Stage 1	759	704	-	593	554	-	-	-	-	-	-	-
Stage 2	579	567	-	735	679	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	308	339	849	303	329	678	1385	-	-	1182	-	-
Mov Cap-2 Maneuver	308	339	-	303	329	-	-	-	-	-	-	-
Stage 1	732	686	-	572	535	-	-	-	-	-	-	-
Stage 2	523	547	-	669	662	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.3	15.2	0.7	0.9
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1385	-	-	558	413	1182	-	-
HCM Lane V/C Ratio	0.027	-	-	0.112	0.149	0.022	-	-
HCM Control Delay (s)	7.7	0	-	12.3	15.2	8.1	0	-
HCM Lane LOS	A	A	-	B	C	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.4	0.5	0.1	-	-

# HCM 2010 TWSC

## 1: South Main Street/Main Street & Ferry Street/School Street

### Intersection

Int Delay, s/veh 2.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	6 ✓	7 ✓	15 ✓	21 ✓	11 ✓	28 ✓	20 ✓	371 ✓	33 ✓	30 ✓	224 ✓	6 ✓
Future Vol, veh/h	6	7	15	21	11	28	20	371	33	30	224	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	59	59	59	83	83	83	87	87	87	95	95	95
Heavy Vehicles, %	0	0	0	0	13	0	0	1	0	0	3	0
Mvmt Flow	10	12	25	25	13	34	23	426	38	32	236	6

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	818	813	239	813	797	445	242	0	0	464	0	0
Stage 1	303	303	-	491	491	-	-	-	-	-	-	-
Stage 2	515	510	-	322	306	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.63	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.63	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.63	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4.117	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	297	315	805	299	307	617	1336	-	-	1108	-	-
Stage 1	711	667	-	563	530	-	-	-	-	-	-	-
Stage 2	546	541	-	694	642	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	260	298	805	269	290	617	1336	-	-	1108	-	-
Mov Cap-2 Maneuver	260	298	-	269	290	-	-	-	-	-	-	-
Stage 1	695	645	-	550	518	-	-	-	-	-	-	-
Stage 2	491	529	-	638	621	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.4	17	0.4	1
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1336	-	-	429	372	1108	-	-
HCM Lane V/C Ratio	0.017	-	-	0.111	0.194	0.029	-	-
HCM Control Delay (s)	7.7	0	-	14.4	17	8.3	0	-
HCM Lane LOS	A	A	-	B	C	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.4	0.7	0.1	-	-

# HCM 2010 TWSC

## 1: South Main Street/Main Street & Ferry Street/School Street

### Intersection

Int Delay, s/veh 3.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	6 ✓	8 ✓	28 ✓	21 ✓	13 ✓	28 ✓	37 ✓	378 ✓	33 ✓	30 ✓	224 ✓	6 ✓
Future Vol, veh/h	6	8	28	21	13	28	37	378	33	30	224	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	59	59	59	83	83	83	87	87	87	95	95	95
Heavy Vehicles, %	0	0	0	0	13	0	0	1	0	0	3	0
Mvmt Flow	10	14	47	25	16	34	43	434	38	32	236	6

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	867	861	239	873	845	453	242	0	0	472	0	0
Stage 1	303	303	-	539	539	-	-	-	-	-	-	-
Stage 2	564	558	-	334	306	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.63	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.63	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.63	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4.117	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	275	295	805	273	288	611	1336	-	-	1100	-	-
Stage 1	711	667	-	530	504	-	-	-	-	-	-	-
Stage 2	514	515	-	684	642	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	234	272	805	233	266	611	1336	-	-	1100	-	-
Mov Cap-2 Maneuver	234	272	-	233	266	-	-	-	-	-	-	-
Stage 1	680	644	-	507	482	-	-	-	-	-	-	-
Stage 2	449	492	-	609	620	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.1	18.8	0.6	1
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1336	-	-	468	335	1100	-	-
HCM Lane V/C Ratio	0.032	-	-	0.152	0.223	0.029	-	-
HCM Control Delay (s)	7.8	0	-	14.1	18.8	8.4	0	-
HCM Lane LOS	A	A	-	B	C	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.5	0.8	0.1	-	-



HCM 2010 TWSC  
 2: Main Street & Canal Street

Intersection

Int Delay, s/veh 0.8

Movement	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations	Y			Y	Y	
Traffic Vol, veh/h	10 ✓	7 ✓	7 ✓	118 ✓	259 ✓	1 ✓
Future Vol, veh/h	10	7	7	118	259	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	61	61	87	87	84	84
Heavy Vehicles, %	10	0	0	3	2	0
Mvmt Flow	16	11	8	136	308	1

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	461	309	309	0	-	0
Stage 1	309	-	-	-	-	-
Stage 2	152	-	-	-	-	-
Critical Hdwy	6.5	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.5	-	-	-	-	-
Critical Hdwy Stg 2	5.5	-	-	-	-	-
Follow-up Hdwy	3.59	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	544	736	1263	-	-	-
Stage 1	727	-	-	-	-	-
Stage 2	857	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	540	736	1263	-	-	-
Mov Cap-2 Maneuver	540	-	-	-	-	-
Stage 1	722	-	-	-	-	-
Stage 2	857	-	-	-	-	-

Approach	SE	NE	SW
HCM Control Delay, s	11.2	0.4	0
HCM LOS	B		

Minor Lane/Major Mvmt	NEL	NET	SELn1	SWT	SWR
Capacity (veh/h)	1263	-	607	-	-
HCM Lane V/C Ratio	0.006	-	0.046	-	-
HCM Control Delay (s)	7.9	0	11.2	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

HCM 2010 TWSC  
 2: Main Street & Canal Street

Intersection

Int Delay, s/veh 0.8

Movement	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations	↖			↗	↘	
Traffic Vol, veh/h	12 ✓	8 ✓	8 ✓	136 ✓	299 ✓	1 ✓
Future Vol, veh/h	12	8	8	136	299	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	61	61	87	87	84	84
Heavy Vehicles, %	10	0	0	3	2	0
Mvmt Flow	20	13	9	156	356	1

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	531	357	357	0	-	0
Stage 1	357	-	-	-	-	-
Stage 2	174	-	-	-	-	-
Critical Hdwy	6.5	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.5	-	-	-	-	-
Critical Hdwy Stg 2	5.5	-	-	-	-	-
Follow-up Hdwy	3.59	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	495	692	1213	-	-	-
Stage 1	691	-	-	-	-	-
Stage 2	837	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	491	692	1213	-	-	-
Mov Cap-2 Maneuver	491	-	-	-	-	-
Stage 1	685	-	-	-	-	-
Stage 2	837	-	-	-	-	-

Approach	SE	NE	SW
HCM Control Delay, s	11.9	0.4	0
HCM LOS	B		

Minor Lane/Major Mvmt	NEL	NET	SELn1	SWT	SWR
Capacity (veh/h)	1213	-	556	-	-
HCM Lane V/C Ratio	0.008	-	0.059	-	-
HCM Control Delay (s)	8	0	11.9	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

HCM 2010 TWSC  
2: Main Street & Canal Street

Intersection

Int Delay, s/veh 1.3

Movement	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations	Y			↑	↓	
Traffic Vol, veh/h	25 ✓	8 ✓	9 ✓	136 ✓	299 ✓	4 ✓
Future Vol, veh/h	25	8	9	136	299	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	61	61	87	87	84	84
Heavy Vehicles, %	10	0	0	3	2	0
Mvmt Flow	41	13	10	156	356	5

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	535	359	361	0	-	0
Stage 1	359	-	-	-	-	-
Stage 2	176	-	-	-	-	-
Critical Hdwy	6.5	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.5	-	-	-	-	-
Critical Hdwy Stg 2	5.5	-	-	-	-	-
Follow-up Hdwy	3.59	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	492	690	1209	-	-	-
Stage 1	689	-	-	-	-	-
Stage 2	836	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	488	690	1209	-	-	-
Mov Cap-2 Maneuver	488	-	-	-	-	-
Stage 1	683	-	-	-	-	-
Stage 2	836	-	-	-	-	-

Approach	SE	NE	SW
HCM Control Delay, s	12.6	0.5	0
HCM LOS	B		

Minor Lane/Major Mvmt	NEL	NET	SELn1	SWT	SWR
Capacity (veh/h)	1209	-	525	-	-
HCM Lane V/C Ratio	0.009	-	0.103	-	-
HCM Control Delay (s)	8	0	12.6	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

HCM 2010 TWSC  
 2: Main Street & Canal Street

Intersection

Int Delay, s/veh 0.9

Movement	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations	Y			Y	Y	
Traffic Vol, veh/h	15 ✓	10 ✓	10 ✓	166 ✓	364 ✓	1 ✓
Future Vol, veh/h	15	10	10	166	364	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	61	61	87	87	84	84
Heavy Vehicles, %	10	0	0	3	2	0
Mvmt Flow	25	16	11	191	433	1

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	647	434	434
Stage 1	434	-	-
Stage 2	213	-	-
Critical Hdwy	6.5	6.2	4.1
Critical Hdwy Stg 1	5.5	-	-
Critical Hdwy Stg 2	5.5	-	-
Follow-up Hdwy	3.59	3.3	2.2
Pot Cap-1 Maneuver	423	626	1136
Stage 1	637	-	-
Stage 2	804	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	418	626	1136
Mov Cap-2 Maneuver	418	-	-
Stage 1	630	-	-
Stage 2	804	-	-

Approach	SE	NE	SW
HCM Control Delay, s	13.2	0.5	0
HCM LOS	B		

Minor Lane/Major Mvmt	NEL	NET SELn1	SWT	SWR
Capacity (veh/h)	1136	-	482	-
HCM Lane V/C Ratio	0.01	-	0.085	-
HCM Control Delay (s)	8.2	0	13.2	-
HCM Lane LOS	A	A	B	-
HCM 95th %tile Q(veh)	0	-	0.3	-

HCM 2010 TWSC  
 2: Main Street & Canal Street

Intersection

Int Delay, s/veh	1.4					
Movement	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations	Y			Y	Y	
Traffic Vol, veh/h	28 ✓	10 ✓	11 ✓	166 ✓	364 ✓	4 ✓
Future Vol, veh/h	28	10	11	166	364	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	61	61	87	87	84	84
Heavy Vehicles, %	10	0	0	3	2	0
Mvmt Flow	46	16	13	191	433	5

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	653	436	438	0	-	0
Stage 1	436	-	-	-	-	-
Stage 2	217	-	-	-	-	-
Critical Hdwy	6.5	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.5	-	-	-	-	-
Critical Hdwy Stg 2	5.5	-	-	-	-	-
Follow-up Hdwy	3.59	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	420	625	1133	-	-	-
Stage 1	635	-	-	-	-	-
Stage 2	801	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	415	625	1133	-	-	-
Mov Cap-2 Maneuver	415	-	-	-	-	-
Stage 1	627	-	-	-	-	-
Stage 2	801	-	-	-	-	-

Approach	SE	NE	SW
HCM Control Delay, s	14.2	0.5	0
HCM LOS	B		

Minor Lane/Major Mvmt	NEL	NET SELn1	SWT	SWR
Capacity (veh/h)	1133	-	455	-
HCM Lane V/C Ratio	0.011	-	0.137	-
HCM Control Delay (s)	8.2	0	14.2	-
HCM Lane LOS	A	A	B	-
HCM 95th %tile Q(veh)	0	-	0.5	-

HCM 2010 TWSC  
 2: Main Street & Canal Street

Intersection

Int Delay, s/veh 0.5

Movement SEL SER NEL NET SWT SWR

Lane Configurations	Y					
Traffic Vol, veh/h	7 ✓	6 ✓	8 ✓	272 ✓	186 ✓	5 ✓
Future Vol, veh/h	7	6	8	272	186	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	61	61	87	87	84	84
Heavy Vehicles, %	10	0	0	3	2	0
Mvmt Flow	11	10	9	313	221	6

Major/Minor Minor2 Major1 Major2

Conflicting Flow All	555	224	227	0	-	0
Stage 1	224	-	-	-	-	-
Stage 2	331	-	-	-	-	-
Critical Hdwy	6.5	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.5	-	-	-	-	-
Critical Hdwy Stg 2	5.5	-	-	-	-	-
Follow-up Hdwy	3.59	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	479	820	1353	-	-	-
Stage 1	795	-	-	-	-	-
Stage 2	710	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	475	820	1353	-	-	-
Mov Cap-2 Maneuver	475	-	-	-	-	-
Stage 1	789	-	-	-	-	-
Stage 2	710	-	-	-	-	-

Approach SE NE SW

HCM Control Delay, s	11.3	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt NEL NET SELn1 SWT SWR

Capacity (veh/h)	1353	-	589	-	-
HCM Lane V/C Ratio	0.007	-	0.036	-	-
HCM Control Delay (s)	7.7	0	11.3	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

HCM 2010 TWSC  
 2: Main Street & Canal Street

Intersection

Int Delay, s/veh 0.6

Movement SEL SER NEL NET SWT SWR

Lane Configurations	↘			↗	↗	
Traffic Vol, veh/h	8 ✓	7 ✓	9 ✓	314 ✓	214 ✓	6 ✓
Future Vol, veh/h	8	7	9	314	214	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	61	61	87	87	84	84
Heavy Vehicles, %	10	0	0	3	2	0
Mvmt Flow	13	11	10	361	255	7

Major/Minor Minor2 Major1 Major2

Conflicting Flow All	640	259	262	0	-	0
Stage 1	259	-	-	-	-	-
Stage 2	381	-	-	-	-	-
Critical Hdwy	6.5	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.5	-	-	-	-	-
Critical Hdwy Stg 2	5.5	-	-	-	-	-
Follow-up Hdwy	3.59	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	427	785	1314	-	-	-
Stage 1	766	-	-	-	-	-
Stage 2	673	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	423	785	1314	-	-	-
Mov Cap-2 Maneuver	423	-	-	-	-	-
Stage 1	758	-	-	-	-	-
Stage 2	673	-	-	-	-	-

Approach SE NE SW

HCM Control Delay, s 12 0.2 0  
 HCM LOS B

Minor Lane/Major Mvmt NEL NET SELn1 SWT SWR

Capacity (veh/h)	1314	-	539	-	-
HCM Lane V/C Ratio	0.008	-	0.046	-	-
HCM Control Delay (s)	7.8	0	12	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

HCM 2010 TWSC  
 2: Main Street & Canal Street

Intersection

Int Delay, s/veh 0.8

Movement	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations	↖			↗	↘	
Traffic Vol, veh/h	15 ✓	7 ✓	11 ✓	314 ✓	214 ✓	19 ✓
Future Vol, veh/h	15	7	11	314	214	19
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	61	61	87	87	84	84
Heavy Vehicles, %	10	0	0	3	2	0
Mvmt Flow	25	11	13	361	255	23

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	654	267	278	0	-	0
Stage 1	267	-	-	-	-	-
Stage 2	387	-	-	-	-	-
Critical Hdwy	6.5	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.5	-	-	-	-	-
Critical Hdwy Stg 2	5.5	-	-	-	-	-
Follow-up Hdwy	3.59	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	419	777	1296	-	-	-
Stage 1	760	-	-	-	-	-
Stage 2	669	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	414	777	1296	-	-	-
Mov Cap-2 Maneuver	414	-	-	-	-	-
Stage 1	750	-	-	-	-	-
Stage 2	669	-	-	-	-	-

Approach	SE	NE	SW
HCM Control Delay, s	13	0.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NEL	NET	SELn1	SWT	SWR
Capacity (veh/h)	1296	-	486	-	-
HCM Lane V/C Ratio	0.01	-	0.074	-	-
HCM Control Delay (s)	7.8	0	13	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-



HCM 2010 TWSC  
 2: Main Street & Canal Street

Intersection

Int Delay, s/veh	0.6					
Movement	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations	↘			↕	↗	
Traffic Vol, veh/h	10 ✓	9 ✓	11 ✓	383 ✓	261 ✓	7 ✓
Future Vol, veh/h	10	9	11	383	261	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	61	61	87	87	84	84
Heavy Vehicles, %	10	0	0	3	2	0
Mvmt Flow	16	15	13	440	311	8

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	781	315	319	0	-	0
Stage 1	315	-	-	-	-	-
Stage 2	466	-	-	-	-	-
Critical Hdwy	6.5	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.5	-	-	-	-	-
Critical Hdwy Stg 2	5.5	-	-	-	-	-
Follow-up Hdwy	3.59	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	352	730	1252	-	-	-
Stage 1	722	-	-	-	-	-
Stage 2	615	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	347	730	1252	-	-	-
Mov Cap-2 Maneuver	347	-	-	-	-	-
Stage 1	712	-	-	-	-	-
Stage 2	615	-	-	-	-	-

Approach	SE	NE	SW
HCM Control Delay, s	13.4	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NEL	NET	SELn1	SWT	SWR
Capacity (veh/h)	1252	-	462	-	-
HCM Lane V/C Ratio	0.01	-	0.067	-	-
HCM Control Delay (s)	7.9	0	13.4	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

HCM 2010 TWSC  
 2: Main Street & Canal Street

Intersection

Int Delay, s/veh 0.9

Movement	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations	Y			↑	↓	
Traffic Vol, veh/h	17 ✓	9 ✓	13 ✓	383 ✓	261 ✓	20 ✓
Future Vol, veh/h	17	9	13	383	261	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	61	61	87	87	84	84
Heavy Vehicles, %	10	0	0	3	2	0
Mvmt Flow	28	15	15	440	311	24

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	793	323	335	0	-	0
Stage 1	323	-	-	-	-	-
Stage 2	470	-	-	-	-	-
Critical Hdwy	6.5	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.5	-	-	-	-	-
Critical Hdwy Stg 2	5.5	-	-	-	-	-
Follow-up Hdwy	3.59	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	347	723	1236	-	-	-
Stage 1	716	-	-	-	-	-
Stage 2	613	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	341	723	1236	-	-	-
Mov Cap-2 Maneuver	341	-	-	-	-	-
Stage 1	705	-	-	-	-	-
Stage 2	613	-	-	-	-	-

Approach	SE	NE	SW
HCM Control Delay, s	14.6	0.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NEL	NET	SELn1	SWT	SWR
Capacity (veh/h)	1236	-	417	-	-
HCM Lane V/C Ratio	0.012	-	0.102	-	-
HCM Control Delay (s)	7.9	0	14.6	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

HCM 2010 AWSC  
 1: Canal Street & Site Driveway B

**Intersection**

Intersection Delay, s/veh 7.6  
 Intersection LOS A

Movement	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	0 ✓	5 ✓	1 ✓	6 ✓	0 ✓	1 ✓
Future Vol, veh/h	0	5	1	6	0	1
Peak Hour Factor	0.63	0.63	0.58	0.58	0.25	0.25
Heavy Vehicles, %	0	20	100	0	0	0
Mvmt Flow	0	8	2	10	0	4
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SE
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SE		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SE	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	7.3	8.2	6.4
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SELn1
Vol Left, %	0%	0%	0%
Vol Thru, %	100%	14%	0%
Vol Right, %	0%	86%	100%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	5	7	1
LT Vol	0	0	0
Through Vol	5	1	0
RT Vol	0	6	1
Lane Flow Rate	8	12	4
Geometry Grp	1	1	1
Degree of Util (X)	0.009	0.017	0.004
Departure Headway (Hd)	4.257	5.1	3.335
Convergence, Y/N	Yes	Yes	Yes
Cap	845	706	1075
Service Time	2.262	3.101	1.35
HCM Lane V/C Ratio	0.009	0.017	0.004
HCM Control Delay	7.3	8.2	6.4
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0	0.1	0

HCM 2010 AWSC  
 1: Canal Street & Site Driveway B

**Intersection**

Intersection Delay, s/veh 7.6  
 Intersection LOS A

Movement	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	0 ✓	6 ✓	1 ✓	6 ✓	0 ✓	1 ✓
Future Vol, veh/h	0	6	1	6	0	1
Peak Hour Factor	0.63	0.63	0.58	0.58	0.25	0.25
Heavy Vehicles, %	0	20	100	0	0	0
Mvmt Flow	0	10	2	10	0	4
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SE
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SE		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SE	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	7.3	8.2	6.4
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SELn1
Vol Left, %	0%	0%	0%
Vol Thru, %	100%	14%	0%
Vol Right, %	0%	86%	100%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	6	7	1
LT Vol	0	0	0
Through Vol	6	1	0
RT Vol	0	6	1
Lane Flow Rate	10	12	4
Geometry Grp	1	1	1
Degree of Util (X)	0.011	0.017	0.004
Departure Headway (Hd)	4.257	5.1	3.337
Convergence, Y/N	Yes	Yes	Yes
Cap	845	706	1073
Service Time	2.262	3.103	1.354
HCM Lane V/C Ratio	0.012	0.017	0.004
HCM Control Delay	7.3	8.2	6.4
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0	0.1	0

HCM 2010 AWSC  
 1: Canal Street & Site Driveway B

**Intersection**

Intersection Delay, s/veh 7.6  
 Intersection LOS A

Movement	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	0 ✓	7 ✓	1 ✓	11 ✓	12 ✓	4 ✓
Future Vol, veh/h	0	7	1	11	12	4
Peak Hour Factor	0.63	0.63	0.58	0.58	0.25	0.25
Heavy Vehicles, %	0	20	100	0	0	0
Mvmt Flow	0	11	2	19	48	16
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SE
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SE		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SE	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	7.5	8.4	7.3
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SELn1
Vol Left, %	0%	0%	75%
Vol Thru, %	100%	8%	0%
Vol Right, %	0%	92%	25%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	7	12	16
LT Vol	0	0	12
Through Vol	7	1	0
RT Vol	0	11	4
Lane Flow Rate	11	21	64
Geometry Grp	1	1	1
Degree of Util (X)	0.013	0.03	0.07
Departure Headway (Hd)	4.368	5.172	3.955
Convergence, Y/N	Yes	Yes	Yes
Cap	818	692	904
Service Time	2.404	3.201	1.984
HCM Lane V/C Ratio	0.013	0.03	0.071
HCM Control Delay	7.5	8.4	7.3
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0	0.1	0.2

HCM 2010 AWSC  
 1: Canal Street & Site Driveway B

**Intersection**

Intersection Delay, s/veh 7.6  
 Intersection LOS A

Movement	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	0 ✓	7 ✓	1 ✓	6 ✓	0 ✓	1 ✓
Future Vol, veh/h	0	7	1	6	0	1
Peak Hour Factor	0.63	0.63	0.58	0.58	0.25	0.25
Heavy Vehicles, %	0	20	100	0	0	0
Mvmt Flow	0	11	2	10	0	4
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SE
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SE		WB
<b>Conflicting Lanes Left</b>	1	0	1
Conflicting Approach Right		SE	EB
<b>Conflicting Lanes Right</b>	0	1	1
HCM Control Delay	7.3	8.2	6.4
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SELn1
Vol Left, %	0%	0%	0%
Vol Thru, %	100%	14%	0%
Vol Right, %	0%	86%	100%
<b>Sign Control</b>	<b>Stop</b>	<b>Stop</b>	<b>Stop</b>
Traffic Vol by Lane	7	7	1
LT Vol	0	0	0
Through Vol	7	1	0
RT Vol	0	6	1
Lane Flow Rate	11	12	4
<b>Geometry Grp</b>	<b>1</b>	<b>1</b>	<b>1</b>
Degree of Util (X)	0.013	0.017	0.004
<b>Departure Headway (Hd)</b>	<b>4.257</b>	<b>5.102</b>	<b>3.341</b>
Convergence, Y/N	Yes	Yes	Yes
<b>Cap</b>	<b>845</b>	<b>705</b>	<b>1072</b>
Service Time	2.262	3.105	1.358
<b>HCM Lane V/C Ratio</b>	<b>0.013</b>	<b>0.017</b>	<b>0.004</b>
HCM Control Delay	7.3	8.2	6.4
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0	0.1	0

HCM 2010 AWSC  
 1: Canal Street & Site Driveway B

**Intersection**

Intersection Delay, s/veh 7.6  
 Intersection LOS A

Movement	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	0 ✓	8 ✓	1 ✓	11 ✓	12 ✓	4 ✓
Future Vol, veh/h	0	8	1	11	12	4
Peak Hour Factor	0.63	0.63	0.58	0.58	0.25	0.25
Heavy Vehicles, %	0	20	100	0	0	0
Mvmt Flow	0	13	2	19	48	16
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SE
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SE		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SE	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	7.5	8.4	7.3
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SELn1
Vol Left, %	0%	0%	75%
Vol Thru, %	100%	8%	0%
Vol Right, %	0%	92%	25%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	8	12	16
LT Vol	0	0	12
Through Vol	8	1	0
RT Vol	0	11	4
Lane Flow Rate	13	21	64
Geometry Grp	1	1	1
Degree of Util (X)	0.015	0.03	0.07
Departure Headway (Hd)	4.368	5.173	3.957
Convergence, Y/N	Yes	Yes	Yes
Cap	818	692	904
Service Time	2.404	3.203	1.988
HCM Lane V/C Ratio	0.016	0.03	0.071
HCM Control Delay	7.5	8.4	7.3
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0	0.1	0.2

HCM 2010 AWSC  
 1: Canal Street & Site Driveway B

**Intersection**

Intersection Delay, s/veh 8.1  
 Intersection LOS A

Movement	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	0 ✓	9 ✓	5 ✓	3 ✓	7 ✓	0 ✓
Future Vol, veh/h	0	9	5	3	7	0
Peak Hour Factor	0.75	0.75	0.33	0.33	0.44	0.44
Heavy Vehicles, %	0	56	100	33	14	0
Mvmt Flow	0	12	15	9	16	0
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SE
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SE		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SE	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	8	8.6	7.5
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SELn1
Vol Left, %	0%	0%	100%
Vol Thru, %	100%	62%	0%
Vol Right, %	0%	38%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	9	8	7
LT Vol	0	0	7
Through Vol	9	5	0
RT Vol	0	3	0
Lane Flow Rate	12	24	16
Geometry Grp	1	1	1
Degree of Util (X)	0.016	0.036	0.019
Departure Headway (Hd)	4.898	5.412	4.403
Convergence, Y/N	Yes	Yes	Yes
Cap	732	664	811
Service Time	2.92	3.427	2.44
HCM Lane V/C Ratio	0.016	0.036	0.02
HCM Control Delay	8	8.6	7.5
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0	0.1	0.1



HCM 2010 AWSC  
 1: Canal Street & Site Driveway B

**Intersection**

Intersection Delay, s/veh 8.2  
 Intersection LOS A

Movement	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	0 ✓	10 ✓	6 ✓	3 ✓	7 ✓	0 ✓
Future Vol, veh/h	0	10	6	3	7	0
Peak Hour Factor	0.75	0.75	0.33	0.33	0.44	0.44
Heavy Vehicles, %	0	56	100	33	14	0
Mvmt Flow	0	13	18	9	16	0
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SE
Opposing Approach	WB	EB	
<b>Opposing Lanes</b>	1	1	0
Conflicting Approach Left	SE		WB
<b>Conflicting Lanes Left</b>	1	0	1
Conflicting Approach Right		SE	EB
<b>Conflicting Lanes Right</b>	0	1	1
HCM Control Delay	8	8.7	7.5
<b>HCM LOS</b>	A	A	A

Lane	EBLn1	WBLn1	SELn1
Vol Left, %	0%	0%	100%
<b>Vol Thru, %</b>	<b>100%</b>	<b>67%</b>	<b>0%</b>
Vol Right, %	0%	33%	0%
<b>Sign Control</b>	<b>Stop</b>	<b>Stop</b>	<b>Stop</b>
Traffic Vol by Lane	10	9	7
<b>LT Vol</b>	<b>0</b>	<b>0</b>	<b>7</b>
Through Vol	10	6	0
<b>RT Vol</b>	<b>0</b>	<b>3</b>	<b>0</b>
Lane Flow Rate	13	27	16
<b>Geometry Grp</b>	<b>1</b>	<b>1</b>	<b>1</b>
Degree of Util (X)	0.018	0.041	0.019
<b>Departure Headway (Hd)</b>	<b>4.9</b>	<b>5.438</b>	<b>4.408</b>
Convergence, Y/N	Yes	Yes	Yes
<b>Cap</b>	<b>731</b>	<b>661</b>	<b>809</b>
Service Time	2.925	3.453	2.453
<b>HCM Lane V/C Ratio</b>	<b>0.018</b>	<b>0.041</b>	<b>0.02</b>
HCM Control Delay	8	8.7	7.5
<b>HCM Lane LOS</b>	<b>A</b>	<b>A</b>	<b>A</b>
HCM 95th-tile Q	0.1	0.1	0.1

HCM 2010 AWSC  
1: Canal Street & Site Driveway B

Intersection	
Intersection Delay, s/veh	8.5
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations		↔	↔		↔	
Traffic Vol, veh/h	2 ✓	10 ✓	7 ✓	22 ✓	14 ✓	0 ✓
Future Vol, veh/h	2	10	7	22	14	0
Peak Hour Factor	0.75	0.75	0.33	0.33	0.44	0.44
Heavy Vehicles, %	0	56	100	33	14	0
Mvmt Flow	3	13	21	67	32	0
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SE
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SE		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SE	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	7.2	9	7.8
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SELn1
Vol Left, %	17%	0%	100%
Vol Thru, %	83%	24%	0%
Vol Right, %	0%	76%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	12	29	14
LT Vol	2	0	14
Through Vol	10	7	0
RT Vol	0	22	0
Lane Flow Rate	16	88	32
Geometry Grp	1	1	1
Degree of Util (X)	0.018	0.127	0.041
Departure Headway (Hd)	4.054	5.213	4.621
Convergence, Y/N	Yes	Yes	Yes
Cap	874	688	780
Service Time	2.122	3.242	2.621
HCM Lane V/C Ratio	0.018	0.128	0.041
HCM Control Delay	7.2	9	7.8
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.1	0.4	0.1

HCM 2010 AWSC  
 1: Canal Street & Site Driveway B

**Intersection**

Intersection Delay, s/veh 8.2  
 Intersection LOS A

Movement	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	0 ✓	12 ✓	7 ✓	3 ✓	7 ✓	0 ✓
Future Vol, veh/h	0	12	7	3	7	0
Peak Hour Factor	0.75	0.75	0.33	0.33	0.44	0.44
Heavy Vehicles, %	0	56	100	33	14	0
Mvmt Flow	0	16	21	9	16	0
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SE
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SE		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SE	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	8	8.7	7.6
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SELn1
Vol Left, %	0%	0%	100%
Vol Thru, %	100%	70%	0%
Vol Right, %	0%	30%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	12	10	7
LT Vol	0	0	7
Through Vol	12	7	0
RT Vol	0	3	0
Lane Flow Rate	16	30	16
Geometry Grp	1	1	1
Degree of Util (X)	0.022	0.046	0.02
Departure Headway (Hd)	4.903	5.46	4.418
Convergence, Y/N	Yes	Yes	Yes
Cap	730	658	805
Service Time	2.931	3.479	2.471
HCM Lane V/C Ratio	0.022	0.046	0.02
HCM Control Delay	8	8.7	7.6
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.1	0.1	0.1

HCM 2010 AWSC  
 1: Canal Street & Site Driveway B

Intersection

Intersection Delay, s/veh 8.6  
 Intersection LOS A

Movement	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	2 ✓	12 ✓	8 ✓	22 ✓	14 ✓	0 ✓
Future Vol, veh/h	2	12	8	22	14	0
Peak Hour Factor	0.75	0.75	0.33	0.33	0.44	0.44
Heavy Vehicles, %	0	56	100	33	14	0
Mvmt Flow	3	16	24	67	32	0
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SE
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SE		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SE	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	7.2	9.1	7.8
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SELn1
Vol Left, %	14%	0%	100%
Vol Thru, %	86%	27%	0%
Vol Right, %	0%	73%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	14	30	14
LT Vol	2	0	14
Through Vol	12	8	0
RT Vol	0	22	0
Lane Flow Rate	19	91	32
Geometry Grp	1	1	1
Degree of Util (X)	0.021	0.132	0.041
Departure Headway (Hd)	4.052	5.23	4.636
Convergence, Y/N	Yes	Yes	Yes
Cap	874	685	777
Service Time	2.122	3.26	2.636
HCM Lane V/C Ratio	0.022	0.133	0.041
HCM Control Delay	7.2	9.1	7.8
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.1	0.5	0.1

HCM 2010 TWSC  
4: Canal Street & Site Driveway C

Intersection

Int Delay, s/veh 5.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	1 ✓	23 ✓	5 ✓	5 ✓	5 ✓	0 ✓
Future Vol, veh/h	1	23	5	5	5	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	63	63	50	50
Heavy Vehicles, %	0	0	0	20	100	0
Mvmt Flow	1	26	8	8	10	0

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	34	10	10
Stage 1	10	-	-
Stage 2	24	-	-
Critical Hdwy	6.4	6.2	4.1
Critical Hdwy Stg 1	5.4	-	-
Critical Hdwy Stg 2	5.4	-	-
Follow-up Hdwy	3.5	3.3	2.2
Pot Cap-1 Maneuver	984	1077	1623
Stage 1	1018	-	-
Stage 2	1004	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	979	1077	1623
Mov Cap-2 Maneuver	979	-	-
Stage 1	1013	-	-
Stage 2	1004	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.4	3.6	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1623	-	1073	-	-
HCM Lane V/C Ratio	0.005	-	0.025	-	-
HCM Control Delay (s)	7.2	0	8.4	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

HCM 2010 TWSC  
 4: Canal Street & Site Driveway C

Intersection

Int Delay, s/veh	5.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↑			↑	↑	
Traffic Vol, veh/h	1 ✓	23 ✓	5 ✓	6 ✓	5 ✓	0 ✓
Future Vol, veh/h	1	23	5	6	5	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	63	63	50	50
Heavy Vehicles, %	0	0	0	20	100	0
Mvmt Flow	1	26	8	10	10	0

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	36	10	10	0	0
Stage 1	10	-	-	-	-
Stage 2	26	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-
Pot Cap-1 Maneuver	982	1077	1623	-	-
Stage 1	1018	-	-	-	-
Stage 2	1002	-	-	-	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	977	1077	1623	-	-
Mov Cap-2 Maneuver	977	-	-	-	-
Stage 1	1013	-	-	-	-
Stage 2	1002	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.4	3.3	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1623	-	1072	-	-
HCM Lane V/C Ratio	0.005	-	0.025	-	-
HCM Control Delay (s)	7.2	0	8.4	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

HCM 2010 TWSC  
 4: Canal Street & Site Driveway C

Intersection

Int Delay, s/veh	3.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖			↗	↘	
Traffic Vol, veh/h	0 ✓	14 ✓	17 ✓	12 ✓	6 ✓	1 ✓
Future Vol, veh/h	0	14	17	12	6	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	75	75	31	31
Heavy Vehicles, %	0	0	0	56	100	0
Mvmt Flow	0	16	23	16	19	3

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	83	21	22	0	-
Stage 1	21	-	-	-	-
Stage 2	62	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-
Pot Cap-1 Maneuver	924	1062	1607	-	-
Stage 1	1007	-	-	-	-
Stage 2	966	-	-	-	-
Platoon blocked, %					
Mov Cap-1 Maneuver	911	1062	1607	-	-
Mov Cap-2 Maneuver	911	-	-	-	-
Stage 1	993	-	-	-	-
Stage 2	966	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.4	4.3	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1607	-	1062	-	-
HCM Lane V/C Ratio	0.014	-	0.015	-	-
HCM Control Delay (s)	7.3	0	8.4	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

HCM 2010 TWSC  
4: Canal Street & Site Driveway C

Intersection

Int Delay, s/veh 3.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖			↖	↗	
Traffic Vol, veh/h	0 ✓	14 ✓	17 ✓	14 ✓	7 ✓	1 ✓
Future Vol, veh/h	0	14	17	14	7	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	75	75	31	31
Heavy Vehicles, %	0	0	0	56	100	0
Mvmt Flow	0	16	23	19	23	3

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	90	25 26	0 - 0
Stage 1	25	- -	- - -
Stage 2	65	- -	- - -
Critical Hdwy	6.4	6.2 4.1	- - -
Critical Hdwy Stg 1	5.4	- -	- - -
Critical Hdwy Stg 2	5.4	- -	- - -
Follow-up Hdwy	3.5	3.3 2.2	- - -
Pot Cap-1 Maneuver	915	1057 1601	- - -
Stage 1	1003	- -	- - -
Stage 2	963	- -	- - -
Platoon blocked, %			- - -
Mov Cap-1 Maneuver	901	1057 1601	- - -
Mov Cap-2 Maneuver	901	- -	- - -
Stage 1	988	- -	- - -
Stage 2	963	- -	- - -

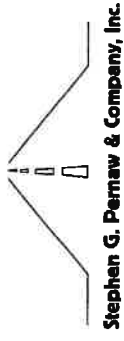
Approach	EB	NB	SB
HCM Control Delay, s	8.5	4	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1601	-	1057	-	-
HCM Lane V/C Ratio	0.014	-	0.015	-	-
HCM Control Delay (s)	7.3	0	8.5	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-



**Appendix G**

**Auxiliary Turn Lane Warrants Analysis**



**Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.**

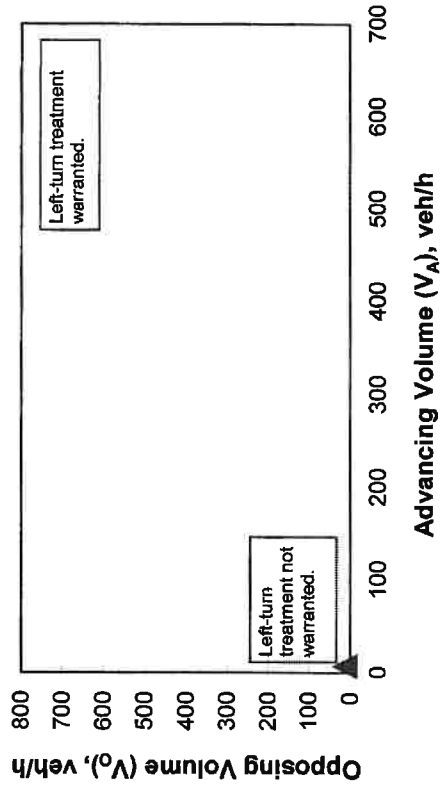
**2-lane roadway (English)**

**INPUT**

Variable	Value
85 <sup>th</sup> percentile speed, mph:	25
Percent of left-turns in advancing volume ( $V_A$ ), %:	0%
Advancing volume ( $V_A$ ), veh/h:	7
Opposing volume ( $V_O$ ), veh/h:	12

**OUTPUT**

Variable	Value
Limiting advancing volume ( $V_A$ ), veh/h:	6363
<b>Guidance for determining the need for a major-road left-turn bay:</b>	
<b>Left-turn treatment NOT warranted.</b>	



**CALIBRATION CONSTANTS**

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

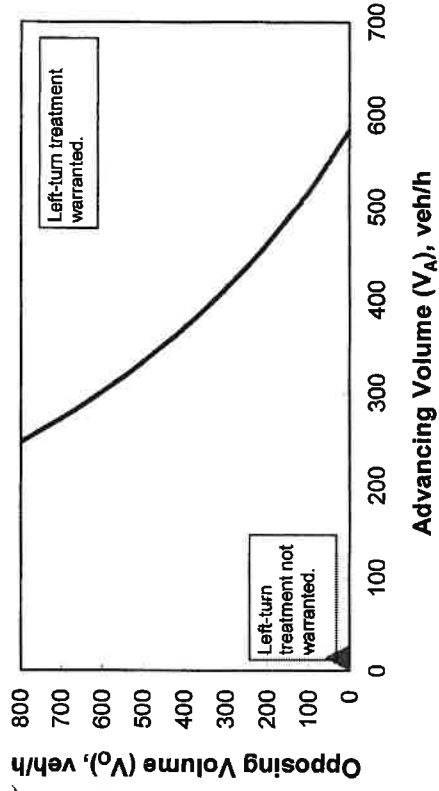
2-lane roadway (English)

INPUT

Variable	Value
85 <sup>th</sup> percentile speed, mph:	25
Percent of left-turns in advancing volume ( $V_A$ ), %:	14%
Advancing volume ( $V_A$ ), veh/h:	14
Opposing volume ( $V_O$ ), veh/h:	30

OUTPUT

Variable	Value
Limiting advancing volume ( $V_A$ ), veh/h:	562
Guidance for determining the need for a major-road left-turn bay: Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

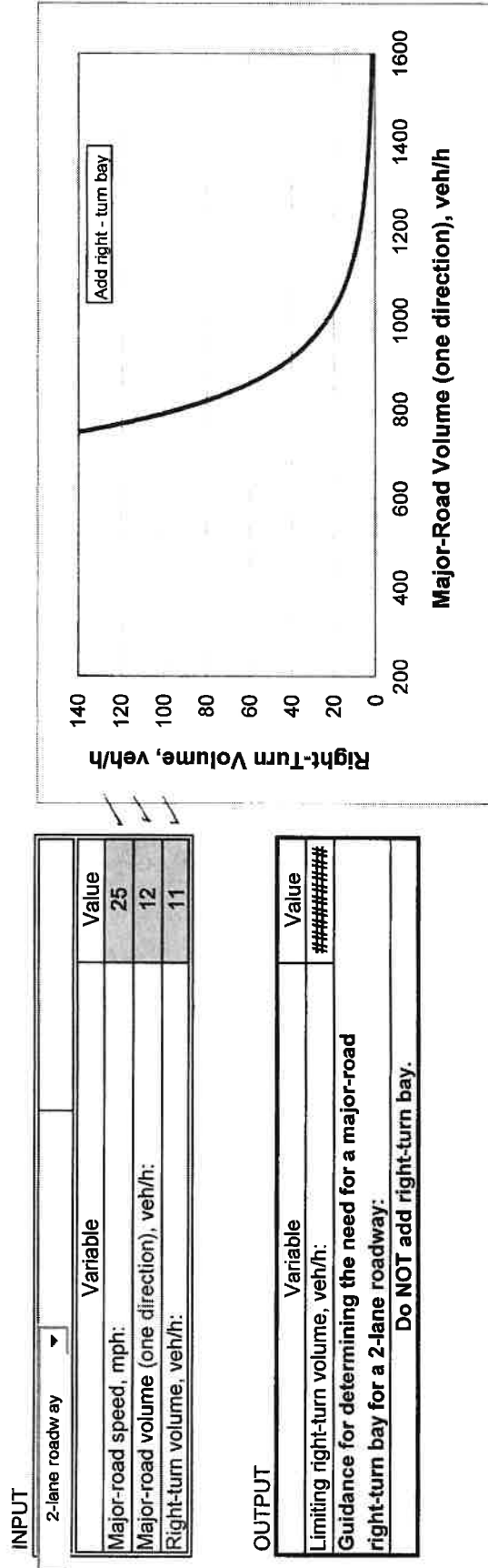


Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

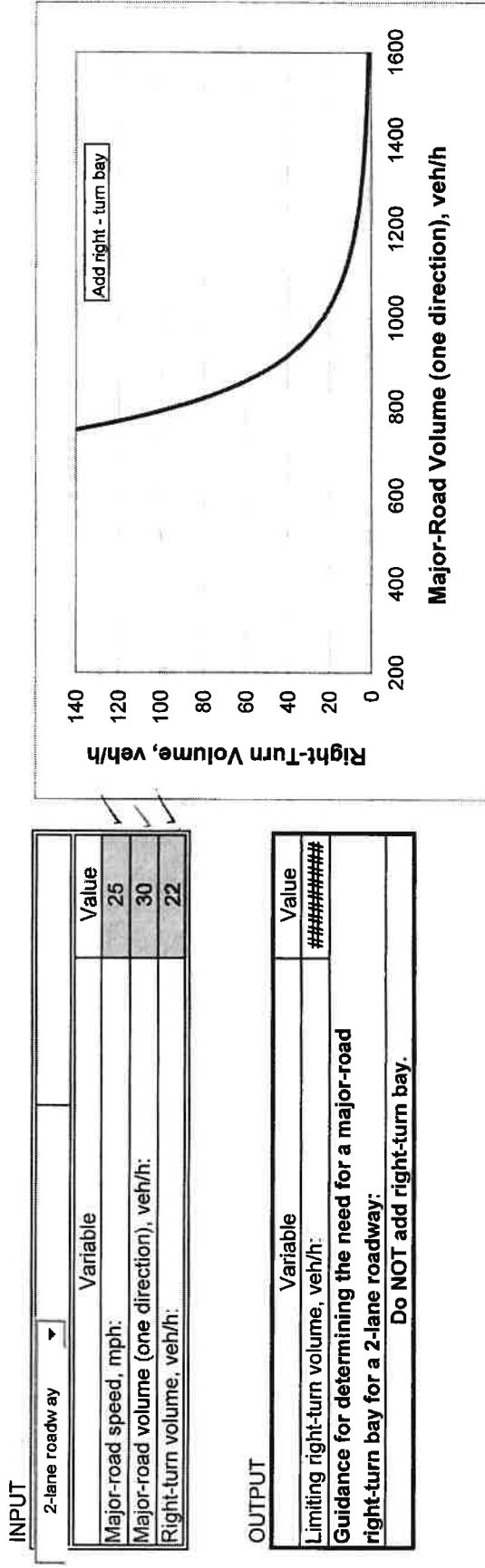


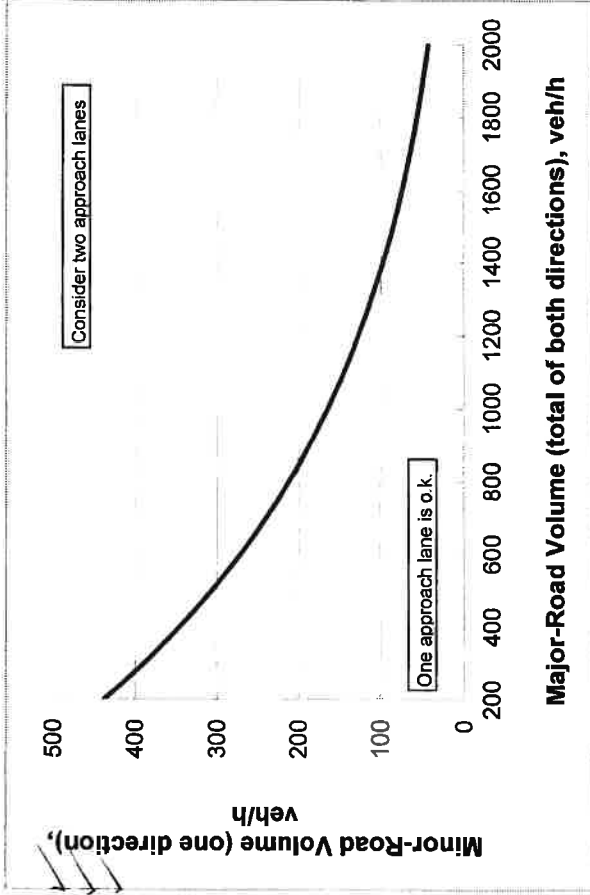
Figure 2 - 4. Guideline for determining minor-road approach geometry at two-way stop-controlled intersections.

INPUT

Variable	Value
Major-road volume (total of both directions), veh/h:	19
Percentage of right-turns on minor road, %:	25%
Minor-road volume (one direction), veh/h:	16

OUTPUT

Variable	Value
Limiting minor-road volume (one direction), veh/h:	539
Guidance for determining minor-road approach geometry:	ONE approach lane is o.k.



CALIBRATION CONSTANTS

Minor Road	Critical gap, s:	Follow-up gap, s:
Right-turn capacity, veh/h:	6.2	3.3
Left-turn and through capacity, veh/h:	6.5	4.0

\* according to Table 17 - 5 of the HCM

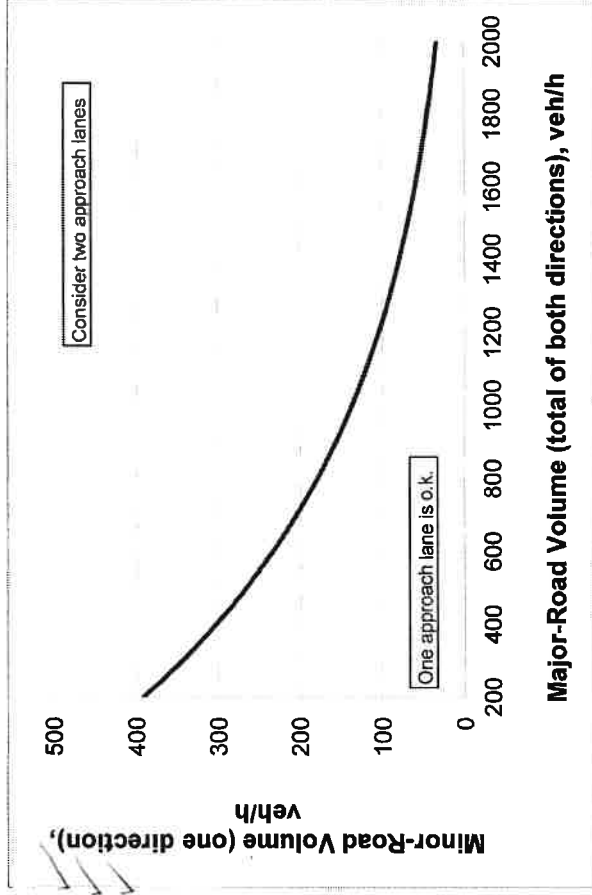
**Figure 2 - 4. Guideline for determining minor-road approach geometry at two-way stop-controlled intersections.**

**INPUT**

Variable	Value
Major-road volume (total of both directions), veh/h:	44
Percentage of right-turns on minor road, %:	0%
Minor-road volume (one direction), veh/h:	14

**OUTPUT**

Variable	Value
Limiting minor-road volume (one direction), veh/h:	477
<b>Guidance for determining minor-road approach geometry:</b>	
<b>ONE approach lane is o.k.</b>	



**CALIBRATION CONSTANTS**

Minor Road	Critical gap, s:	Follow-up gap, s:
Right-turn capacity, veh/h:	6.2	3.3
Left-turn and through capacity, veh/h:	6.5	4.0

\* according to Table 17 - 5 of the HCM

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

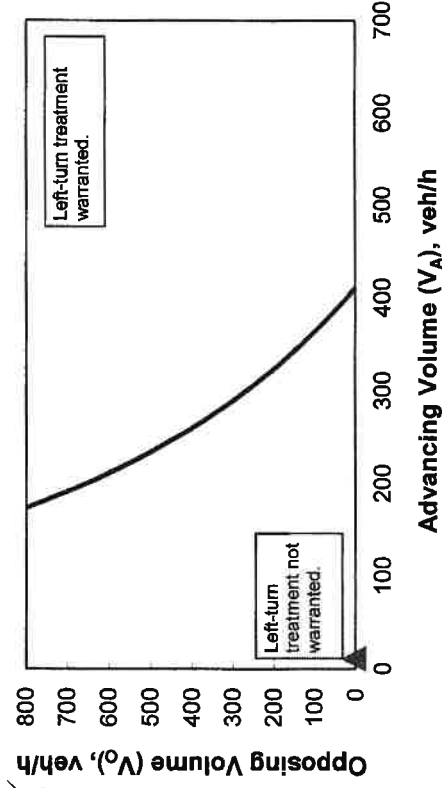
2-lane roadway (English)

INPUT

Variable	Value
85 <sup>th</sup> percentile speed, mph:	25
Percent of left-turns in advancing volume ( $V_A$ ), %:	45%
Advancing volume ( $V_A$ ), veh/h:	11
Opposing volume ( $V_O$ ), veh/h:	5

OUTPUT

Variable	Value
Limiting advancing volume ( $V_A$ ), veh/h:	408
Guidance for determining the need for a major-road left-turn bay: Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9



**Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.**

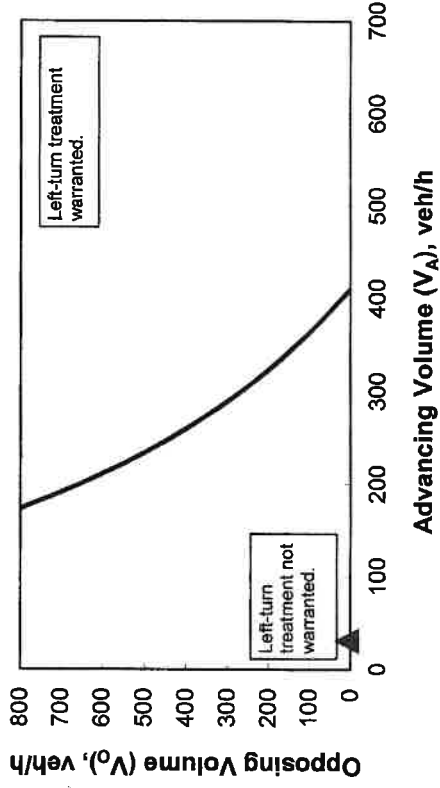
**2-lane roadway (English)**

**INPUT**

Variable	Value
85 <sup>th</sup> percentile speed, mph:	25
Percent of left-turns in advancing volume ( $V_A$ ), %:	55%
Advancing volume ( $V_A$ ), veh/h:	31
Opposing volume ( $V_O$ ), veh/h:	8

**OUTPUT**

Variable	Value
Limiting advancing volume ( $V_A$ ), veh/h:	406
<b>Guidance for determining the need for a major-road left-turn bay:</b>	
<b>Left-turn treatment NOT warranted.</b>	



**CALIBRATION CONSTANTS**

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

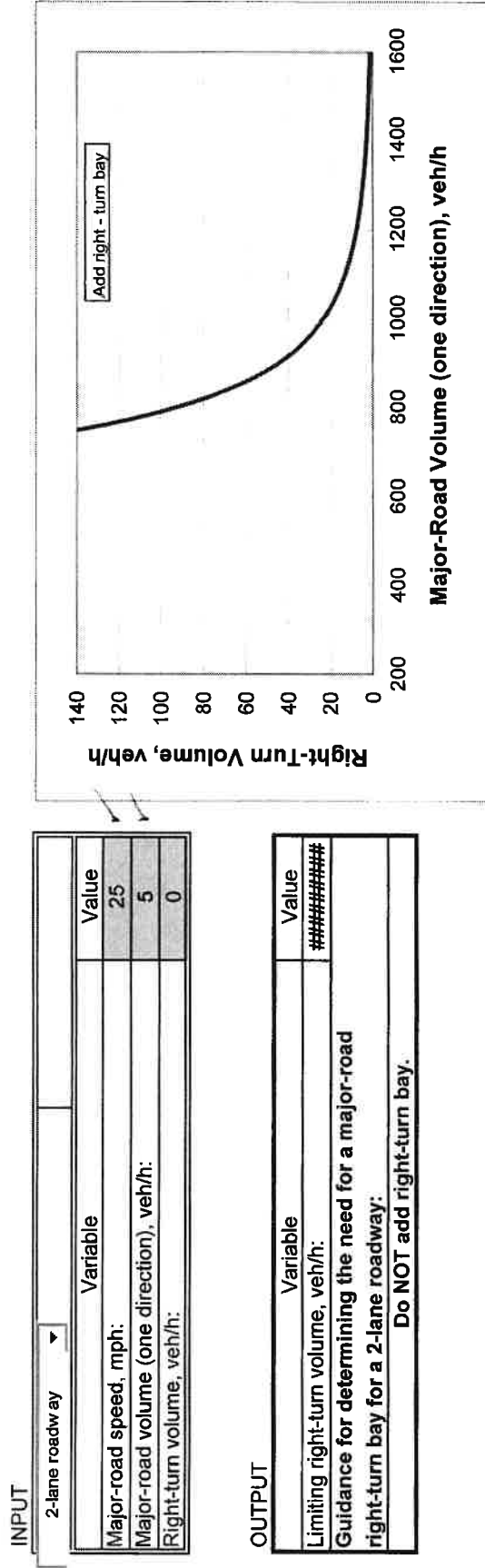
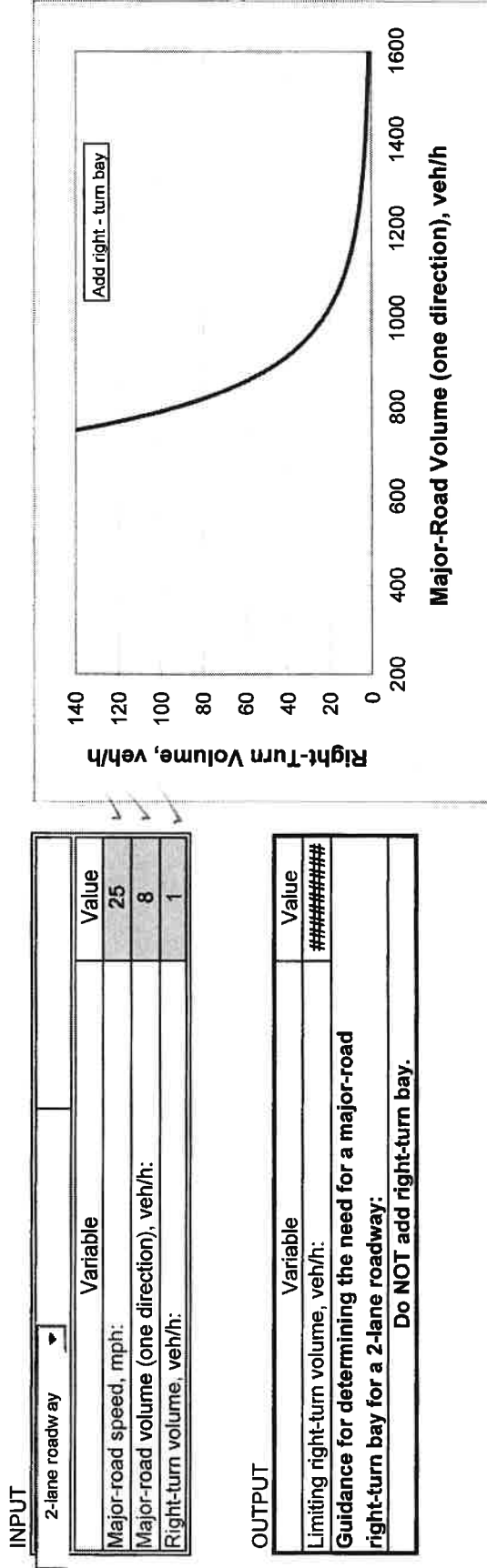


Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.



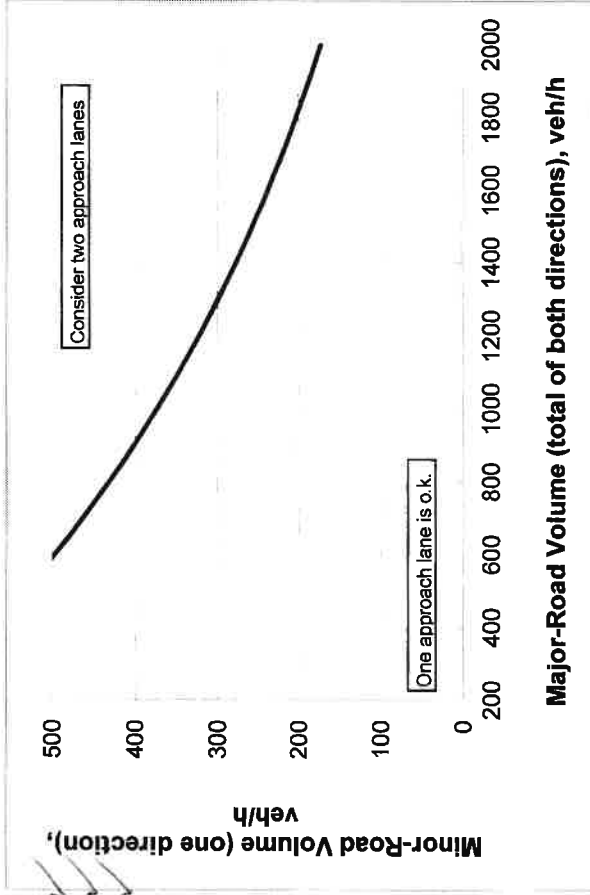
**Figure 2 - 4. Guideline for determining minor-road approach geometry at two-way stop-controlled intersections.**

**INPUT**

Variable	Value
Major-road volume (total of both directions), veh/h:	16
Percentage of right-turns on minor road, %:	96%
Minor-road volume (one direction), veh/h:	24

**OUTPUT**

Variable	Value
Limiting minor-road volume (one direction), veh/h:	740
<b>Guidance for determining minor-road approach geometry:</b> ONE approach lane is o.k.	



**CALIBRATION CONSTANTS**

Minor Road	Critical gap, s:	Follow-up gap, s:
Right-turn capacity, veh/h:	6.2	3.3
Left-turn and through capacity, veh/h:	6.5	4.0

\* according to Table 17 - 5 of the HCM

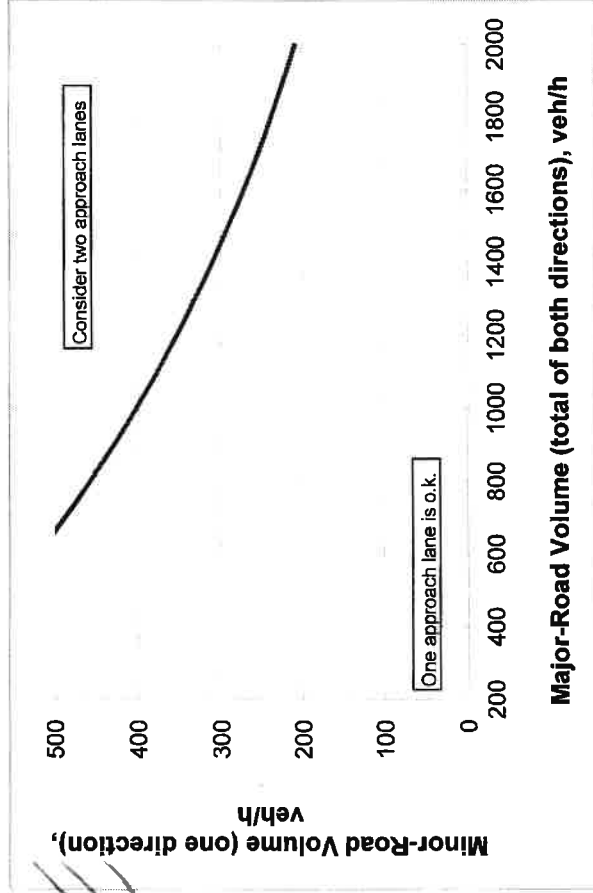
Figure 2 - 4. Guideline for determining minor-road approach geometry at two-way stop-controlled intersections.

INPUT

Variable	Value
Major-road volume (total of both directions), veh/h:	39
Percentage of right-turns on minor road, %:	100%
Minor-road volume (one direction), veh/h:	14

OUTPUT

Limiting minor-road volume (one direction), veh/h:	745
Guidance for determining minor-road approach geometry:	ONE approach lane is o.k.



CALIBRATION CONSTANTS

Minor Road	Critical gap, s:	Follow-up gap, s:
Right-turn capacity, veh/h:	6.2	3.3
Left-turn and through capacity, veh/h:	6.5	4.0

\* according to Table 17 - 5 of the HCM