

# MEMORANDUM

**TO:** Mr. Jason White  
J&L Terra Holdings Inc.  
79 Exeter Road  
North Hampton, NH 03862

**FROM:** Mr. Jeffrey S. Dirk, P.E., PTOE, FITE  
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*Professional Engineer in CT, MA, ME, NH, RI and VA*

**DATE:** November 30, 2020

**RE:** 8756

**SUBJECT:** Traffic Impact Study  
The Crossing at Village Center – NH Route 125 at NH Route 9  
Barrington, New Hampshire

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Vanasse & Associates, Inc. (VAI) has conducted a Traffic Impact Study (TIS) in order to determine the potential impacts on the transportation infrastructure associated with a proposed multifamily residential community to be known as The Crossing at Village Center and generally situated in the southeast quadrant of the intersection of Calef Highway (NH Route 125) at Franklin Pierce Highway (NH Route 9) in Barrington, New Hampshire (hereafter referred to as the “Project”). This study is responsive to the scope of work that was identified in the October 1, 2020 letter from Highway Maintenance District 6 of the New Hampshire Department of Transportation (NHDOT) concerning the Driveway Permit Application that was submitted for the Project and has been completed in accordance with NHDOT standards for the preparation of a TIS. Specifically, this study evaluates the following specific areas as they relate to the Project: i) access requirements; ii) potential off-site improvements; and iii) safety considerations; and identifies and analyzes existing traffic conditions and future traffic conditions, both with and without the Project along NH Route 9 and at the Project site roadway intersection with NH Route 9. Based on this assessment, we have concluded the following with respect to the Project:

1. Using trip-generation statistics published by the Institute of Transportation Engineers (ITE),<sup>1</sup> the Project is expected to generate approximately 564 vehicle trips on an average weekday and 652 vehicle trips on a Saturday (both two-way, 24 hour volumes), with 39 vehicle trips expected during the weekday morning peak-hour, 48 vehicle trips expected during the weekday evening peak-hour and 56 vehicle trips expected during the Saturday midday peak-hour;
2. Under 2021 Opening -Year Build conditions, all movements exiting the Project site were shown to operate at a level-of-service (LOS) of C or better during the peak-hours with a predicted vehicle queue of up to one (1) vehicle. Under 2031 Build conditions, traffic volumes along NH Route 9 are expected to increase independent of the Project and resulted in increased delays for motorists exiting the Project site. The increased delay was shown to result in a degradation in LOS for

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<sup>1</sup>*Trip Generation*, 10<sup>th</sup> Edition; Institute of Transportation Engineers; Washington, DC; 2017.



vehicles existing the Project site during the weekday morning peak-hour from LOS C to LOS E; however, the residual vehicle queue was shown to continue to be minor (up to one (1)) and can be contained within the Project site without impeding access, circulation, or the movement of vehicles along NH Route 9;

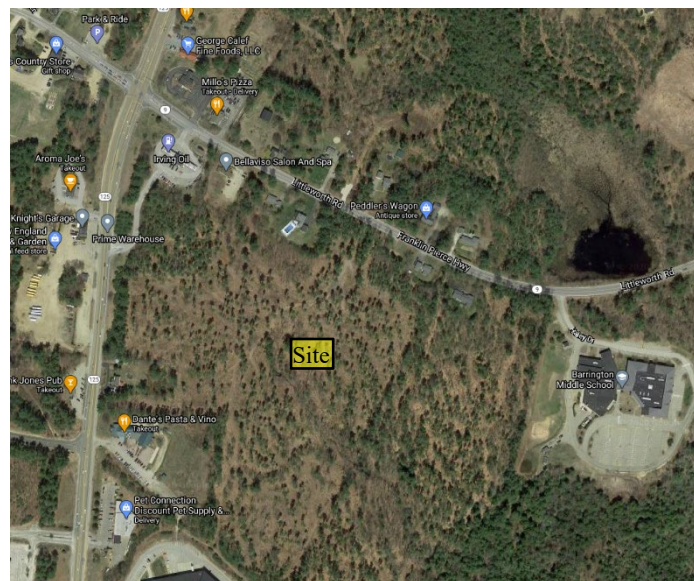
3. Lines of sight at the Project site roadway intersection with NH Route 9 were found to exceed the required minimum distance for the intersection to function in a safe and efficient manner; and
4. A review of the criteria for the installation of auxiliary turn lanes at the Project site roadway intersection with NH Route 9 indicates that the addition of a right-turn lane is not justified based on the applicable criteria and that the installation of a left-turn lane is justified during the weekday evening peak-hour only and, as such, does not appear to be necessary at this time.

In consideration of the above, we have concluded that the Project can be accommodated within the confines of the existing transportation infrastructure in a safe and efficient manner with implementation of the recommendations defined herein.

The following details our assessment of the Project.

## **PROJECT DESCRIPTION**

The Project will entail the construction of a 80-unit multifamily residential community to be known as The Crossing at Village Center and generally situated in the southeast quadrant of the intersection of NH Route 125 at NH Route 9 in Barrington, New Hampshire. The Project site encompasses approximately 21.09± acres of land that is bounded by NH Route 9 and residential properties to the north; commercial properties and areas of open and wooded space to the south; residential properties and areas of open and wooded space to the east; and residential and commercial properties and areas of open and wooded space to the west. Access to the Project site will be provided by way of a new roadway that will intersect the south side of NH Route 9 approximately 1,150 feet east of NH Route 125.



Imagery ©2020 Google



Off-street parking will be provided for the individual units in accordance with Section 4.9.13, *Parking Standards by Use*, of the Town of Barrington *Site Plan Review Regulations for Nonresidential Uses and Multi-Family Dwelling Units*.<sup>2</sup>

## **EXISTING CONDITIONS**

A comprehensive field inventory of existing conditions along NH Route 9 was conducted in October and November 2020. This inventory included the collection of traffic volume data and vehicle travel speed measurements, as well as a review of existing pedestrian and bicycle accommodations, and public transportation services. The following summarizes existing conditions within the study area.

### **Roadway**

#### **NH Route 9**

NH Route 9 is a two-lane major collector roadway (Tier 3, Class I) under NHDOT jurisdiction that traverses the study area in a general east-west alignment between US Route 202 and the Maine State Line. In the vicinity of the Project site, NH Route 9 provides two 12± foot wide travel lanes separated by a double-yellow centerline with 4± foot wide marked shoulders and additional travel lanes provided at major intersections. The posted speed limit along NH Route 9 within the study area is 35 miles per hour (mph). Land use along NH Route 9 in the vicinity of the Project site consists of residential and commercial properties, the Barrington Middle School, and areas of open and wooded space.

### **Existing Traffic Volumes**

In order to determine existing traffic-volume demands and flow patterns within the study area, automatic traffic recorder (ATR) counts were completed on NH Route 9 proximate to the Project site in October 2020. The ATR counts were conducted over a continuous 72-hour period from Thursday, October 15<sup>th</sup> through Saturday, October 17<sup>th</sup>, 2020, inclusive, in order to record traffic conditions over an extended period.

In order to evaluate the potential for seasonal fluctuation of traffic volumes within the study area, 2019 peak-hour and average daily traffic count data were reviewed for NHDOT count station No. 02389090, which is located on NH Route 16 at the Rochester Toll Plaza in Rochester. Based on a review of this data, it was determined that traffic volumes for the month of October are approximately 13 percent below peak-month conditions and, therefore, the raw traffic count data that forms the basis of this assessment was adjusted upward accordingly (by 13 percent) to represent peak-month conditions in accordance with NHDOT standards.

In order to account for the impact on traffic volumes and trip patterns resulting from the COVID-19 pandemic, an ATR was conducted along NH Route 125, south of Scruton Pond Road, on Thursday, October 15<sup>th</sup> through Saturday, October 17<sup>th</sup>, 2020, and were compared to an ATR conducted at the same location on Thursday, March 7<sup>th</sup> through Saturday, March 9<sup>th</sup>, 2019. Both ATRs were adjusted to peak-month conditions, with the 2019 ATR increased by an additional 1.0 percent in order to be representative of 2020 traffic volume conditions (discussion follows). Based on this comparison, the October 2020 traffic volumes that were collected as a part of this assessment were adjusted upward by an additional 17 percent.

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<sup>2</sup>One (1) parking space per dwelling unit, plus one (1) additional parking space for every group of three or more units is required.



Based on a review of the adjusted (seasonal and COVID-19) 2020 traffic count data, NH Route 9 in the vicinity of the Project site accommodates approximately 11,920 vehicles per day on an average weekday and 7,660 vehicles on a Saturday (both two-way, 24-hour volumes) under peak-month conditions, with approximately 1,238 vehicles per hour (vph) during the weekday morning peak-hour (7:00 to 8:00 AM), 1,215 vph during the weekday evening peak-hour (4:30 to 5:30 PM) and 708 vph during the Saturday midday peak-hour (12:30 to 1:30 PM). The 2020 Existing weekday morning, weekday evening and Saturday midday peak-month peak-hour traffic volumes are graphically depicted on Figure 1.

**Pedestrian and Bicycle Facilities**

Sidewalks and formal bicycle facilities are not currently provided within the study area. That being said, NH Route 9 generally provides sufficient width (combined travel lane and shoulder) to support bicycle travel in a shared traveled-way configuration.<sup>3</sup>

**Spot Speed Measurements**

Vehicle travel speed measurements were performed on NH Route 9 in the vicinity of the Project site in conjunction with the ATR counts, the results of which are summarized in Table 1.

**Table 1  
VEHICLE TRAVEL SPEED MEASUREMENTS**

	NH Route 9	
	Eastbound	Westbound
Mean Travel Speed (mph)	43	42
85 <sup>th</sup> Percentile Speed (mph)	47	47
Posted Speed Limit (mph)	35	35

mph = miles per hour.

As can be seen in Table 1, the mean vehicle travel speed along NH Route 9 in the vicinity of the Project site was found to be 43 mph in the eastbound direction and 42 mph westbound. The measured 85<sup>th</sup> percentile vehicle travel speed, or the speed at which 85 percent of the observed vehicles traveled at or below, was found to be 47 mph in both directions, which is 12 mph above the posted speed limit (35 mph). The 85<sup>th</sup> percentile speed is used as the basis of engineering design and in the evaluation of sight distances, and is often used in establishing posted speed limits.

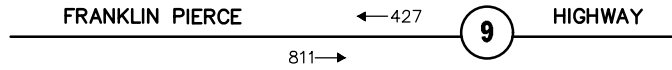
**Public Transportation**

Regularly scheduled public transportation services are not currently provided within the study area. The closest public transportation options are available in the Cities of Dover and Rochester, where bus services are provided by the Cooperative Alliance For Seacoast Transportation (COAST). Regional bus services

<sup>3</sup>A minimum combined travel lane and paved shoulder width of 14-feet is recommended to support bicycle travel in a shared traveled-way condition.

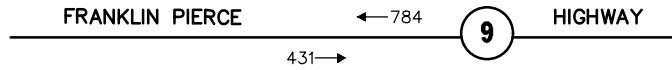


WEEKDAY MORNING PEAK HOUR (7:00 - 8:00 AM)



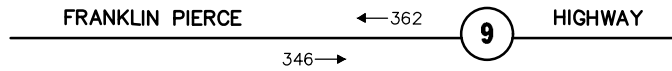
**SITE**

WEEKDAY EVENING PEAK HOUR (4:30 - 5:30 PM)



**SITE**

SATURDAY MIDDAY PEAK HOUR (12:30 - 1:30 PM)



**SITE**



Figure 1

2020 Existing  
Peak Month  
Peak Hour Traffic Volumes

are available at the Portsmouth Transportation Center and air transportation is available at the Portsmouth International Airport.

### **Motor Vehicle Crash Data**

Motor vehicle crash information for NH Route 9 in the vicinity of the Project site roadways has been requested from the Barrington Police Department in order to examine motor vehicle crash trends occurring at this location. This data will be summarized in a supplemental memorandum as soon as it is received.

### **FUTURE CONDITIONS**

Traffic volumes in the study area were projected to the years 2021 and 2031, which reflect the anticipated opening-year of the Project and a ten-year planning horizon from opening-year, respectively, consistent with NHDOT TIS guidelines. The future condition traffic-volume projections incorporate identified specific development projects by others, as well as general background traffic growth as a result of development external to the study area and presently unforeseen projects. Anticipated Project-generated traffic volumes superimposed upon the 2021 and 2031 No-Build traffic volumes reflect the Build conditions with the Project.

### **Future Traffic Growth**

Future traffic growth is a function of the expected land development in the immediate area and the surrounding region. Several methods can be used to estimate this growth. A procedure frequently employed estimates an annual percentage increase in traffic growth and applies that percentage to all traffic volumes under study. The drawback to such a procedure is that some turning volumes may actually grow at either a higher or a lower rate at particular intersections.

An alternative procedure identifies the location and type of planned development, estimates the traffic to be generated, and assigns it to the area roadway network. This procedure produces a more realistic estimate of growth for local traffic; however, potential population growth and development external to the study area would not be accounted for in the resulting traffic projections.

To provide a conservative analysis framework, both procedures were used, the salient components of which are described below.

### **Specific Development by Others**

The Town of Barrington was contacted in order to determine if there were any projects planned within the study area that would have an impact on future traffic volumes along NH Route 9. Based on that discussion, the following projects were identified for review in conjunction with this assessment:

***The Ridge at Green Hill, NH Route 125, Barrington, New Hampshire.*** This proposed project consists of the construction of 56 single-family homes, 10,000± square foot (sf) of commercial space, and a 10,000± sf municipal building to be located off NH Route 125 north of NH Route 9.

***Proposed Mixed-Use Development, NH Route 125, Barrington, New Hampshire.*** This potential future project would entail the construction of a mixed use development that would include a mix of commercial space and residential units to be located off NH Route 125.



Traffic volumes associated with the aforementioned specific development projects by others that are expected to result in an increase in traffic within the study area that would exceed the general background traffic growth rate were obtained from the traffic study prepared in support of the project or were developed using trip-generation information available from the ITE<sup>4</sup> for the appropriate land use, and were assigned onto the study area roadway network based on existing traffic patterns where no other information was available. No other developments were identified at this time that are expected to result in an increase in traffic within the study area beyond the general background traffic growth rate.

### **General Background Traffic Growth**

A review of historic traffic growth information compiled by NHDOT for the Town of Barrington was undertaken in order to determine general traffic growth trends. Based on a review of this data and consistent with prior traffic studies conducted within the Town that included NH Route 9,<sup>5</sup> a 1.0 percent per year compounded annual background traffic growth rate was used in order to account for future traffic growth and presently unforeseen development within the study area.

### **Roadway Improvement Projects**

The Town of Barrington and NHDOT were contacted in order to determine if there were any planned roadway improvement projects expected to be completed within the study area. Based on these discussions, no roadway improvement projects aside from routine maintenance activities were identified to be planned within the study area at this time.

To the west of the Project site, the proponent of The Ridge at Green Hill will be designing and implementing an optimal traffic signal timing and phasing plan for the NH Route 125/NH Route 9 intersection.

### **No-Build Traffic Volumes**

The 2021 and 2031 No-Build peak-month peak-hour traffic volumes were developed by applying the 1.0 percent per year compounded annual background traffic growth rate to the 2020 Existing peak-month peak-hour traffic volumes and then superimposing the peak-hour traffic volumes associated with the identified specific development projects by others. The resulting 2021 No-Build weekday morning, weekday evening and Saturday midday peak-month peak-hour traffic volumes are shown on Figure 2, with the corresponding 2031 No-Build peak-month peak-hour traffic volumes shown on Figure 3.

### **Project-Generated Traffic**

Design year (2021 and 2031) Build traffic volumes for the study area roadways were determined by estimating Project-generated traffic volumes and assigning those volumes on the study roadways. The following sections describe the methodology used to develop the anticipated traffic characteristics of the Project.

As proposed, the Project will entail the construction of an 80-unit multifamily residential community. In order to develop the traffic characteristics of the Project, trip-generation statistics published by the ITE<sup>6</sup> for a similar land use as that proposed were used. ITE Land Use Code (LUC) 220, *Multifamily Housing*

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<sup>4</sup>Ibid 1.

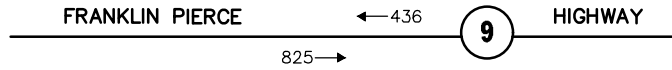
<sup>5</sup>*Traffic Impact Study*; Proposed Mixed-Use Development; Barrington, New Hampshire; VAI; June 2019.

<sup>6</sup>Ibid 1.



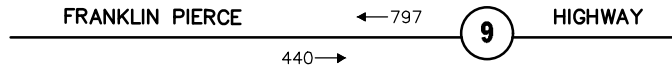


WEEKDAY MORNING PEAK HOUR (7:00 - 8:00 AM)



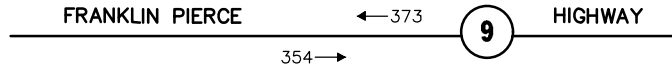
**SITE**

WEEKDAY EVENING PEAK HOUR (4:30 - 5:30 PM)



**SITE**

SATURDAY MIDDAY PEAK HOUR (12:30 - 1:30 PM)



**SITE**

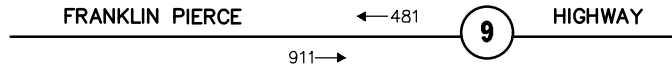


Figure 2

2021 No-Build  
Peak Month  
Peak Hour Traffic Volumes

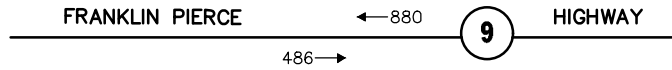


WEEKDAY MORNING PEAK HOUR (7:00 - 8:00 AM)



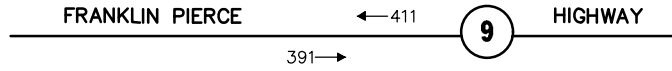
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WEEKDAY EVENING PEAK HOUR (4:30 - 5:30 PM)



**SITE**

SATURDAY MIDDAY PEAK HOUR (12:30 - 1:30 PM)



**SITE**



Figure 3

2031 No-Build  
Peak Month  
Peak Hour Traffic Volumes

(*Low-Rise*), was used to develop the base traffic characteristics of the Project, the results of which are summarized in Table 2.

**Table 2**  
**TRIP GENERATION SUMMARY**

Time Period	Vehicle Trips		
	Entering	Exiting	Total
<i>Average Weekday:</i>	282	282	564
<i>Weekday Morning Peak-Hour:</i>	9	30	39
<i>Weekday Evening Peak-Hour:</i>	30	18	48
<i>Saturday:</i>	326	326	652
<i>Saturday Midday Peak-Hour:</i>	30	26	56

<sup>a</sup>Based on ITE LUC 221, *Multifamily Detached (Low-Rise)* (80 units).

### **Project-Generated Traffic Volume Summary**

As can be seen in Table 2, the Project is expected to generate approximately 564 vehicle trips on an average weekday and 652 vehicle trips on a Saturday (both two-way, 24-hour volumes), with 39 vehicle trips (9 vehicles entering and 30 exiting) expected during the weekday morning peak-hour, 48 vehicle trips (30 vehicles entering and 18 exiting) expected during the weekday evening peak-hour and 56 vehicle trips (30 vehicles entering and 26 exiting) expected during the Saturday midday peak-hour.

### **Trip Distribution and Assignment**

The directional distribution of generated trips to and from the Project site was determined based on a review of existing traffic patterns within the study area during the peak periods. The general trip distribution for the Project is shown on Figure 4. The additional traffic expected to be generated by the Project was assigned on the study area roadway network as shown on Figure 5.

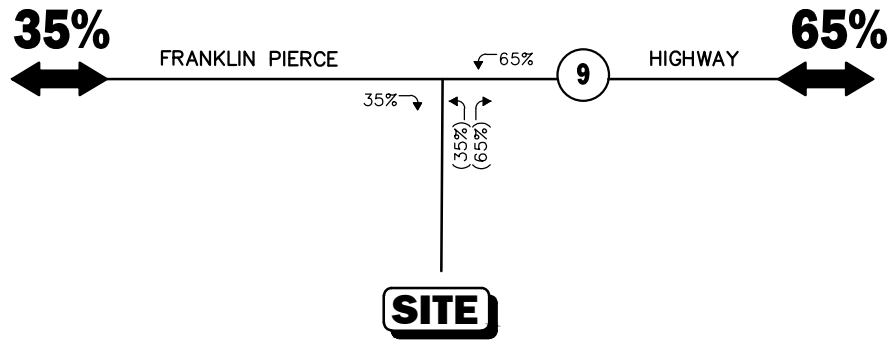
### **Build Traffic Volumes**

The 2021 Opening-Year and 2031 Build condition traffic-volumes were developed by adding Project-generated traffic to the corresponding 2021 and 2031 No-Build peak-month peak-hour traffic-volumes. The resulting 2021 Opening-Year Build condition weekday morning, weekday evening and Saturday midday peak-month peak-hour traffic volumes are graphically depicted on Figure 6, with the corresponding 2031 Build condition peak-month peak-hour traffic volumes depicted on Figure 7.



**Legend:**

- XX Entering Trips
- (XX) Exiting Trips



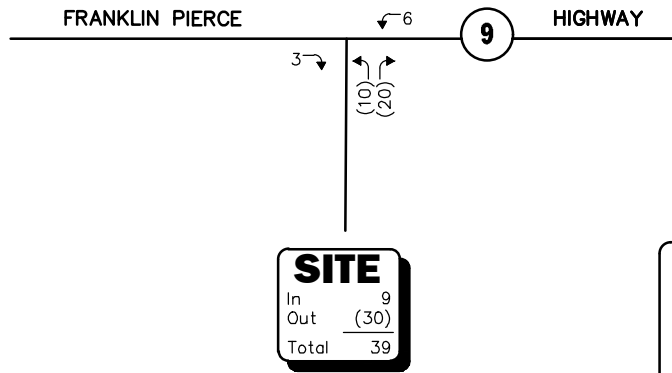
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Figure 4

Trip Distribution Map



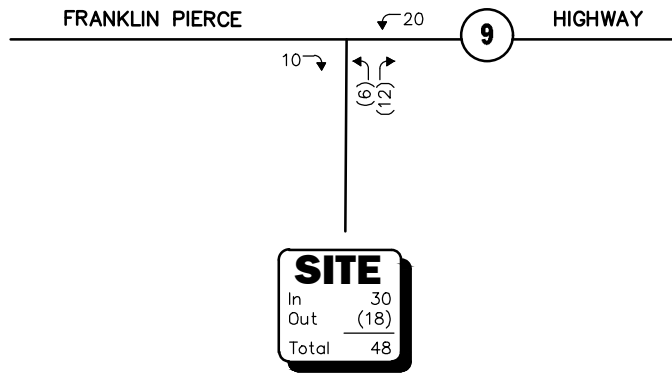
WEEKDAY MORNING PEAK HOUR (7:00 - 8:00 AM)



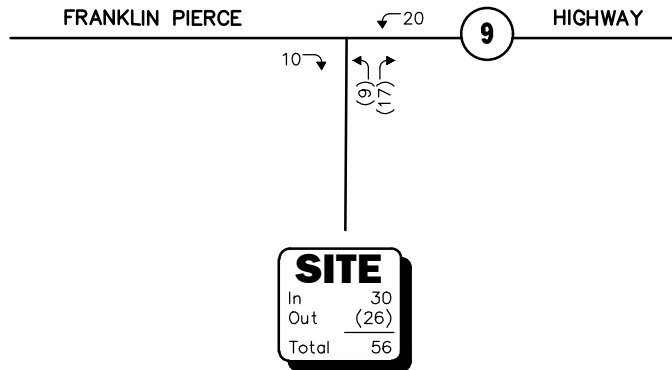
**Legend:**

XX Entering Trips  
 (XX) Exiting Trips

WEEKDAY EVENING PEAK HOUR (4:30 - 5:30 PM)



SATURDAY MIDDAY PEAK HOUR (12:30 - 1:30 PM)



 Not To Scale

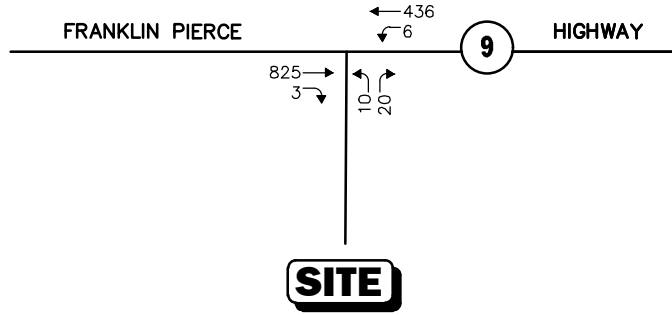


Figure 5

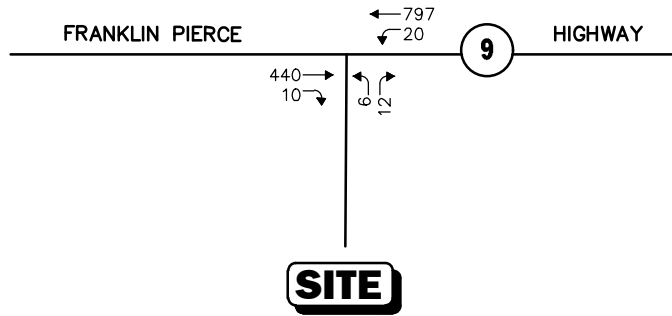
Project Generated  
 Peak Hour Traffic Volumes

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WEEKDAY MORNING PEAK HOUR (7:00 - 8:00 AM)



WEEKDAY EVENING PEAK HOUR (4:30 - 5:30 PM)



SATURDAY MIDDAY PEAK HOUR (12:30 - 1:30 PM)

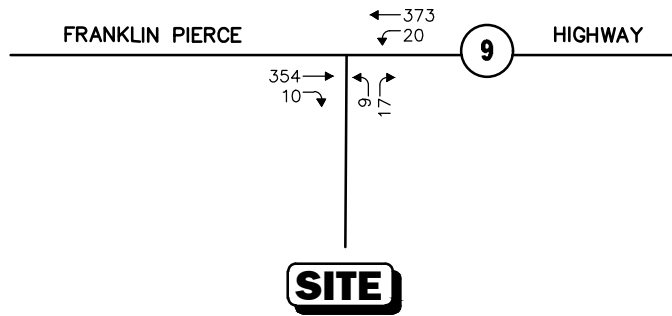
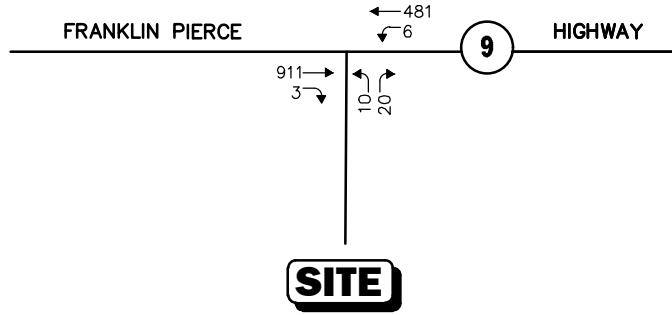


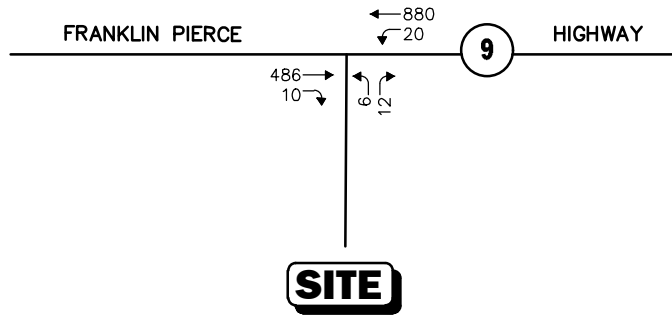
Figure 6

2021 Opening Year  
Peak Month  
Peak Hour Traffic Volumes

WEEKDAY MORNING PEAK HOUR (7:00 - 8:00 AM)



WEEKDAY EVENING PEAK HOUR (4:30 - 5:30 PM)



SATURDAY MIDDAY PEAK HOUR (12:30 - 1:30 PM)

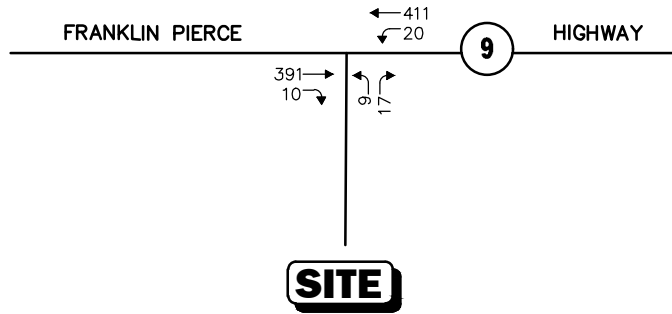


Figure 7

2031 Build  
Peak Month  
Peak Hour Traffic Volumes

## **TRAFFIC OPERATIONS ANALYSIS**

In order to assess the potential impact of the Project on the roadway network, a detailed traffic operations analysis (motorist delays, vehicle queuing and level-of-service) was performed at the Project site roadway intersection with NH Route 9. Capacity analyses provide an indication of how well transportation facilities serve the traffic demands placed upon them, with vehicle queue analyses providing a secondary measure of the operational characteristics of an intersection or section of roadway under study.

In brief, six levels of service are defined for each type of facility. They are given letter designations ranging from A to F, with level-of-service (LOS) “A” representing the best operating conditions and LOS “F” representing congested or constrained operations. An LOS of “E” is representative of a transportation facility that is operating at its design capacity with an LOS of “D” generally defined as the limit of “acceptable” traffic operations. Since the level-of-service of a traffic facility is a function of the flows placed upon it, such a facility may operate at a wide range of levels of service depending on the time of day, day of week, or period of the year. The Synchro® intersection capacity analysis software, which is based on the analysis methodologies and procedures presented in the 2010 *Highway Capacity Manual* (HCM)<sup>7</sup> for unsignalized intersections, was used to complete the level-of-service and vehicle queue analyses.

### **Analysis Results**

The results of the intersection capacity and vehicle queue analyses for the study intersections are summarized in Table 3, with the detailed analysis results presented in the Appendix.

As shown in Table 3, under 2021 Opening-Year Build peak-month conditions, the critical movements at this unsignalized intersection (all movements exiting the Project site) were shown to operate at LOS C during the weekday morning and evening peak hours, and at LOS B during the Saturday midday peak hour, with vehicle queues of up to one (1) vehicle.

Under 2031 Build peak-month conditions, the critical movements were shown to degrade from LOS C to LOS E during the weekday morning peak hour as a result of traffic volume increase along NH Route 9 independent of the Project, and to remain operating at LOS C during the weekday evening peak hour and at LOS B during the Saturday midday peak hour. Vehicle queues exiting the Project site were shown to remain relatively minor (up to one (1) vehicle).

All movements along NH Route 9 are expected to operate at LOS A during the peak periods under all analysis conditions with negligible vehicle queuing predicted.

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<sup>7</sup>*Highway Capacity Manual*, Transportation Research Board; Washington, DC; 2010.





**Table 3**  
**UNSIGNALIZED INTERSECTION LEVEL-OF-SERVICE AND VEHICLE QUEUE SUMMARY**

Unsignalized Intersection/ Peak Hour/Movement	2020 Existing				2021 No-Build				2021 Opening Year				2031 No-Build				2031 Build			
	Demand <sup>a</sup>	Delay <sup>b</sup>	LOS <sup>c</sup>	Queue <sup>d</sup> 95 <sup>th</sup>	Demand	Delay	LOS	Queue 95 <sup>th</sup>	Demand	Delay	LOS	Queue 95 <sup>th</sup>	Demand	Delay	LOS	Queue 95 <sup>th</sup>	Demand	Delay	LOS	Queue 95 <sup>th</sup>
<i><b>NH Route 9 at the Project Site Roadway</b></i>																				
<i>Weekday Morning:</i>																				
NH Route 9 EB TH/RT	--	--	--	--	--	--	--	--	828	0.0	A	0	--	--	--	--	914	0.0	A	0
NH Route 9 WB LT/TH	--	--	--	--	--	--	--	--	442	0.1	A	0	--	--	--	--	487	0.1	A	0
Site Roadway NB LT/RT	--	--	--	--	--	--	--	--	30	30.0	C	1	--	--	--	--	30	37.8	E	1
<i>Weekday Evening:</i>																				
NH Route 9 EB TH/RT	--	--	--	--	--	--	--	--	450	0.0	A	0	--	--	--	--	496	0.0	A	0
NH Route 9 WB LT/TH	--	--	--	--	--	--	--	--	817	0.2	A	0	--	--	--	--	900	0.2	A	0
Site Roadway NB LT/RT	--	--	--	--	--	--	--	--	18	19.7	C	0	--	--	--	--	18	22.8	C	1
<i>Saturday Midday:</i>																				
NH Route 9 EB TH/RT	--	--	--	--	--	--	--	--	364	0.0	A	0	--	--	--	--	401	0.0	A	0
NH Route 9 WB LT/TH	--	--	--	--	--	--	--	--	393	0.4	A	0	--	--	--	--	431	0.4	A	0
Site Roadway NB LT/RT	--	--	--	--	--	--	--	--	26	13.6	B	0	--	--	--	--	26	14.5	B	0

<sup>a</sup>Demand in vehicles per hour.

<sup>b</sup>Average control delay per vehicle (in seconds).

<sup>c</sup>Level-of-Service.

<sup>d</sup>Queue length in vehicles.

SB = southbound; EB = eastbound; WB = westbound; LT = left-turning movements; TH = through movements; RT = right-turning movements.



## SIGHT DISTANCE ASSESSMENT

Sight distance measurements were performed at the Project site roadway intersection with NH Route 9 in accordance with American Association of State Highway and Transportation Officials (AASHTO)<sup>8</sup> requirements. Both stopping sight distance (SSD) and intersection sight distance (ISD) measurements were performed. In brief, SSD is the distance required by a vehicle traveling at the design speed of a roadway, on wet pavement, to stop prior to striking an object in its travel path. ISD or corner sight distance (CSD) is the sight distance required by a driver entering or crossing an intersecting roadway to perceive an on-coming vehicle and safely complete a turning or crossing maneuver with on-coming traffic. In accordance with AASHTO standards, if the measured ISD is at least equal to the required SSD value for the appropriate design speed, the intersection can operate in a safe manner. Table 4 presents the measured SSD and ISD at the subject intersection.

**Table 4**  
**SIGHT DISTANCE MEASUREMENTS<sup>a</sup>**

Intersection/Sight Distance Measurement	Feet		
	Required Minimum (SSD)	Desirable (ISD) <sup>b</sup>	Measured/Attainable
<b><i>NH Route 9 at the Project Site Roadway</i></b>			
<i>Stopping Sight Distance:</i>			
NH Route 9 approaching from the east	425	--	600+
NH Route 9 approaching from the west	425	--	600+
<i>Intersection Sight Distance:</i>			
Looking to the east from the Project site roadway	425	555	600+
Looking to the west from the Project site roadway	425	480	600+

<sup>a</sup>Recommended minimum values obtained from *A Policy on Geometric Design of Highways and Streets*, 7<sup>th</sup> Edition; American Association of State Highway and Transportation Officials (AASHTO); 2018; and based on an approach speed of 50 mph along NH Route 9.

<sup>b</sup>Values shown are the intersection sight distance for a vehicle turning right or left exiting a roadway under STOP control such that motorists approaching the intersection on the major street should not need to adjust their travel speed to less than 70 percent of their initial approach speed.

As can be seen in Table 4, the available lines of sight to and from the Project site roadway intersection with NH Route 9 were found to exceed the recommended minimum sight distances to function in a safe (SSD) and efficient (ISD) manner based on a 50 mph approach speed along NH Route 9, which is 15 mph above the posted speed limit in this area (35 mph) and 3 mph above the measured 85<sup>th</sup> percentile vehicle travel speed (47 mph). As such, ***the Project site roadway is appropriately located to function in a safe manner.***

<sup>8</sup>*A Policy on Geometric Design of Highway and Streets*, 7<sup>th</sup> Edition; American Association of State Highway and Transportation Officials (AASHTO); Washington D.C.; 2018.



## **TURN LANE WARRANTS ANALYSIS**

An auxiliary turn lane warrants analysis was conducted for the NH Route 9 approaches to the Project site roadway in accordance with the methodology and procedures outlined in *NCHRP Report 457*<sup>9</sup> published by the National Cooperative Highway Research Program (NCHRP).

### **Left-Turn Lane**

Determination of the need for a left-turn lane of adequate storage length is a function of the volume of left-turning vehicles at the intersection under study and the magnitude of opposing or conflicting traffic volumes along the roadway. Based on a review of this criteria under the 2021 Opening Year and 2031 Build conditions, the provision of a left-turn lane on the NH Route 9 westbound approach to the Project site roadway is warranted during the weekday evening peak hour only. The detailed analysis of the left-turn lane criteria is presented as an attachment.

A review of the traffic operations analysis at the Project site roadway intersection with NH Route 9 indicates that there are sufficient gaps in through traffic along NH Route 9 to allow left-turning vehicles to enter the Project site without unduly hindering through traffic such that no residual vehicle queuing was reported as a result of left-turn movements accessing the Project site. As such and given that the installation of a left-turn lane on NH Route 9 was found to be justified during the weekday evening peak-hour only, the installation of a left-turn lane does not appear to be necessary at this time.

### **Right-Turn Lane**

Consideration of the need for a right-turn lane is a function of the volume of right-turning vehicles at the intersection and the total volume of traffic on the same approach (advancing volume). Based on a review of this criteria under the 2021 Opening Year and 2031 Build conditions, the provision of a right-turn lane on the NH Route 9 eastbound approach to the Project site roadway is not warranted. The detailed analysis of the right-turn lane criteria is presented as an attachment.

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<sup>9</sup>*NCHRP Report 457 – Evaluating Intersection Improvement: An Engineering Study Guide*, National Cooperative Highway Research Program; 2001.



## SUMMARY

VAI has completed a detailed assessment of the potential impacts on the transportation infrastructure associated with the proposed construction of an 80-unit multifamily residential community to be known as The Crossing at Village Center and generally situated in the southeast quadrant of the intersection of NH Route 125 at NH Route 9 in Barrington, New Hampshire. This study is responsive to the scope of work that was identified in the October 1, 2020 letter from NHDOT Highway Maintenance District 6 concerning the Driveway Permit Application that was submitted for the Project and has been completed in accordance with NHDOT standards for the preparation of a TIS. The following specific areas have been evaluated as they relate to the Project: i) access requirements; ii) potential off-site improvements; and iii) safety considerations; under existing and future conditions, both with and without the Project. Based on this assessment, we have concluded the following with respect to the Project:

1. Using trip-generation statistics published by the ITE,<sup>10</sup> the Project is expected to generate approximately 564 vehicle trips on an average weekday and 652 vehicle trips on a Saturday (both two-way, 24 hour volumes), with 39 vehicle trips expected during the weekday morning peak-hour, 48 vehicle trips expected during the weekday evening peak-hour and 56 vehicle trips expected during the Saturday midday peak-hour;
2. Under 2021 Opening -Year Build conditions, all movements exiting the Project site were shown to operate at a level-of-service (LOS) of C or better during the peak-hours with a predicted vehicle queue of up to one (1) vehicle. Under 2031 Build conditions, traffic volumes along NH Route 9 are expected to increase independent of the Project and resulted in increased delays for motorists exiting the Project site. The increased delay was shown to result in a degradation in LOS for vehicles existing the Project site during the weekday morning peak-hour from LOS C to LOS E; however, the residual vehicle queue was shown to continue to be minor (up to one (1)) and can be contained within the Project site without impeding access, circulation, or the movement of vehicles along NH Route 9;
3. Lines of sight at the Project site roadway intersection with NH Route 9 were found to exceed the required minimum distance for the intersection to function in a safe and efficient manner; and
4. A review of the criteria for the installation of auxiliary turn lanes at the Project site roadway intersection with NH Route 9 indicates that the addition of a right-turn lane is not justified based on the applicable criteria and that the installation of a left-turn lane is justified during the weekday evening peak-hour only and, as such, does not appear to be necessary at this time.

In consideration of the above, we have concluded that the Project can be accommodated within the confines of the existing transportation infrastructure in a safe and efficient manner. This conclusion is predicated on the implementation of the following specific recommendations that should be advanced as a part of the Project, many of which are reflected on the Site Plans:

- The Project site roadway and internal circulating roads should be a minimum of 24-feet in width and designed to accommodate the turning and maneuvering requirements of the largest anticipated responding emergency vehicle as defined by the Barrington Fire Department.
- Vehicles exiting the Project site should be placed under STOP-sign control with a marked STOP-line provided.

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<sup>10</sup>Ibid 1.



- All signs and pavement markings to be installed within the Project site should conform to the applicable standards of the *Manual on Uniform Traffic Control Devices (MUTCD)*.<sup>11</sup>
- Consideration should be given to providing a sidewalk or similar pedestrian accommodation along at least one side of the Project site roadway that should extend to NH Route 9.
- Americans with Disabilities Act (ADA) compliant wheelchair ramps should be provided at all pedestrian crossings that are constricted or modified in conjunction with the Project.
- Driveways to the residential units should be a minimum of 21-feet long measured between the garage door and the far edge of the sidewalk (edge closest to the residence) where a sidewalk is provided, and 23-feet measured between the garage door and the edge of the traveled-way in locations without a sidewalk.
- Signs and landscaping to be installed as a part of the Project within the intersection sight triangle areas of the Project site roadway should be designed and maintained so as not to restrict lines of sight.
- Snow windrows within sight triangle areas of the Project site roadway should be promptly removed where such accumulations would impede sight lines.

With implementation of the above recommendations, safe and efficient access can be provided to the Project site and the Project can be accommodated within the confines of the existing transportation infrastructure.

cc: File

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<sup>11</sup>*Manual on Uniform Traffic Control Devices (MUTCD)*; Federal Highway Administration; Washington, D.C.; 2009.



## ATTACHMENTS

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PROJECT SITE PLAN  
AUTOMATIC TRAFFIC RECORDER COUNT DATA  
SEASONAL ADJUSTMENT DATA  
COVID-19 ADJUSTMENT DATA  
VEHICLE TRAVEL SPEED DATA  
GENERAL BACKGROUND TRAFFIC GROWTH  
TRIP-GENERATION CALCULATIONS  
CAPACITY ANALYSIS WORKSHEETS  
AUXILIARY TURN LANE ANALYSIS

PROJECT SITE PLAN

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- Legend:**
- C2 See Curve Table
  - L1 See Length Table
  - SCRD Strafford County Registry of Deeds
  - Iron Pipe Found
  - Iron Rod Found
  - ✕ Steel Stake Found
  - Granite Bound Found
  - ⊕ Utility Pole
  - Proposed Waterlines
  - Proposed Sewerlines
  - Building Setback
  - Jurisdictional Wetlands
  - Culvert
  - Stone Wall

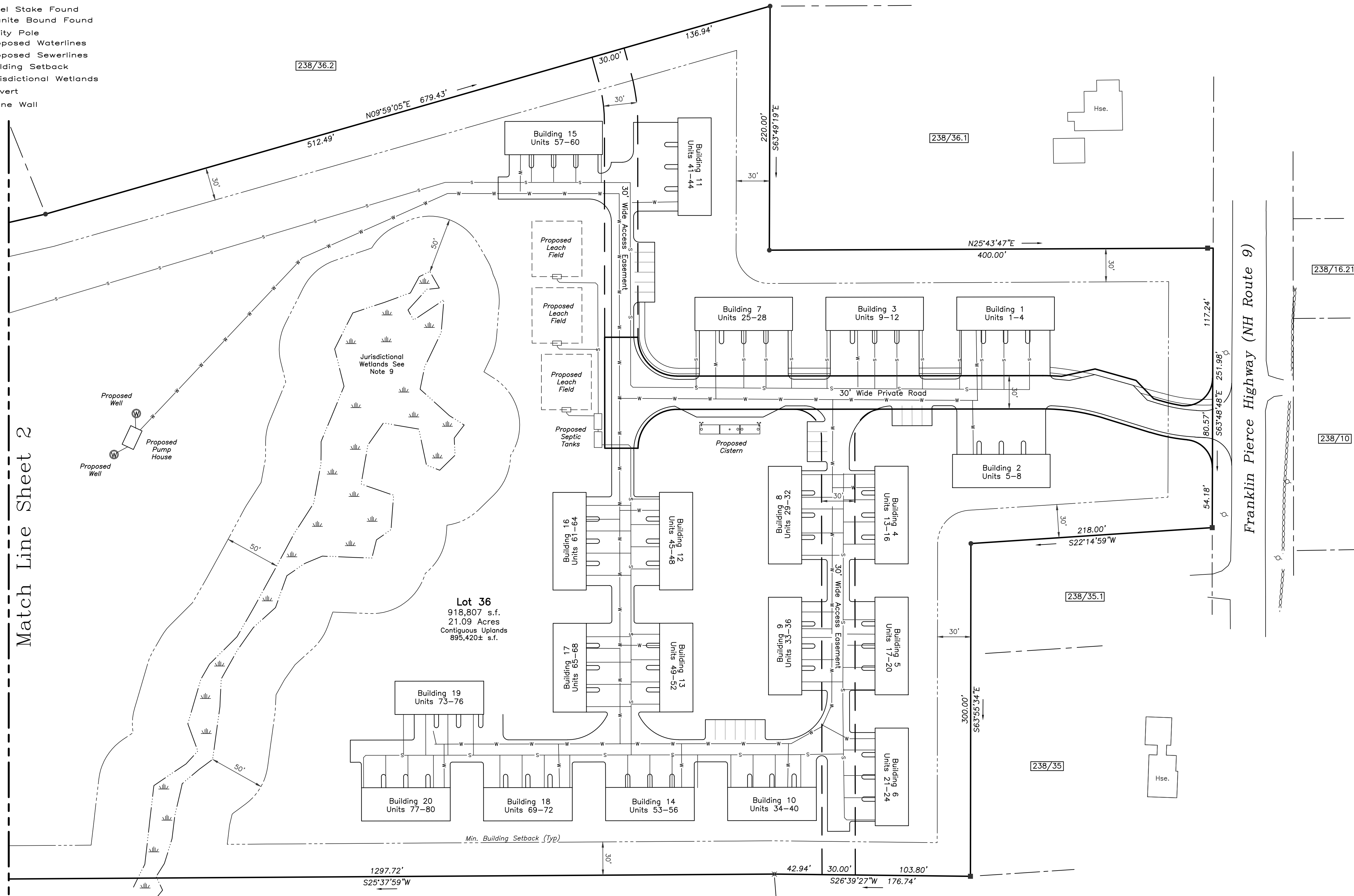
**Reference:**  
 "Lot Line Adjustment for Alan D. Haley & Waldron B. Haley Living Revocable Trust of 1998, Barrington, NH," dated February 2020, revised 03-19-20, prepared by Norway Plains Associates Inc., SCRD Plan #12137.

For Registry of Deeds Purposes



**Notes:**

- 1.) This plan does not represent a determination of title and the purpose of this plan is to depict the proposed improvements of Units 1 through 80 located on the subject parcel for condominium conversion utilizing the boundary information depicted on the plan reference. Each unit is to be served by community septic system and community wells.
- 2.) Plan Error of Closure Better Than 1:15,000.
- 3.) Parcel is shown as Lot 36 on the Town of Barrington Assessor's Map 238.
- 4.) Parcel is located in the Village District & Wetlands Protection District Overlay (50' from edge of jurisdictional wetlands).
- 5.) Owner of Record: Waldron B. Haley Living Revocable Trust of 1998  
14 Shakespeare Road  
Nashua, NH 03062-2431  
SCRD Bk 2068, Pg 247
- 6.) This plan does not show any unrecorded or unwritten easements which may exist. A reasonable and diligent attempt has been made to observe any apparent, visible uses of the land; however this does not constitute that no such easements exist.
- 7.) Parcel is not located in a Flood Hazard Zone as depicted on Flood Insurance Rate Map, No. 33017C0305E, Strafford County, NH, (All Jurisdictions), Effective Date: May 17, 2005.
- 8.) Existing Lot Area: 21.09 Acres
- 9.) The wetland areas shown hereon were field delineated by Gove Environmental Services, Inc., of 8 Continental Drive, Building #2, Unit H, Exeter, NH.
- 10.) NHDOT Driveway Permit: Pending.
- 11.) See Sheet 2 of 2 for Roadway and Access Easement Details.



Match Line Sheet 2

**Lot 36**  
 918,807 s.f.  
 21.09 Acres  
 Contiguous Uplands  
 895,420± s.f.

**CONDOMINIUM SITE PLAN**  
 PREPARED FOR  
**THE CROSSING AT VILLAGE CENTER**  
 OF PROPERTY IN THE NAME OF  
**WALDRON B. HALEY REVOCABLE LIVING TRUST OF 1998**  
 OF  
**TAX MAP 238 / LOT 36**  
 LOCATED AT  
**FRANKLIN PIERCE HIGHWAY (NH ROUTE 9)**  
 COUNTY OF STRAFFORD  
**BARRINGTON, NH**



SCALE: 1" = 100' DATE: SEPTEMBER 3, 2020

**DAVID W. VINCENT, LLS**  
**LAND SURVEYING SERVICES**  
 PO BOX 1622  
 DOVER, NH 03821  
 TEL/FAX (603) 664-5786  
 www.landsurveyingservices.net

**WETLAND SCIENTIST CERTIFICATION**

1. US Army Corps of Engineers Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region, Technical Report ERDC/EL TR-09-19 (Oct 2009).
2. Field Indicators of Hydric Soils in the United States. A Guide for Identifying and Delineating Hydric Soils, Version 7.0. United States Department of Agriculture (2010).
3. North American Digital Flora: National Wetland Plant List, Version 2.2.1 (2009).
4. Classification of Wetlands and Deepwater Habitats of the United States. USFW Manual FWS/OBS-79/31 (1979).

**ZONING REQUIREMENTS**

<b>ZONE (RESIDENTIAL)</b>	<b>VILLAGE DISTRICT</b>
<b>LOT AREA MIN.</b>	80,000 S.F.
<b>FRONTAGE</b>	200 FT.
<b>FRONT YARD</b>	40 FT.
<b>SIDE &amp; REAR YARD</b>	30 FT.
<b>WETLAND BUFFER</b>	50 FT.
<b>MAX. BUILDING HEIGHT</b>	35 FT.
<b>MAX. BUILDING STORIES</b>	2.5
<b>MAX. LOT COVERAGE</b>	40%

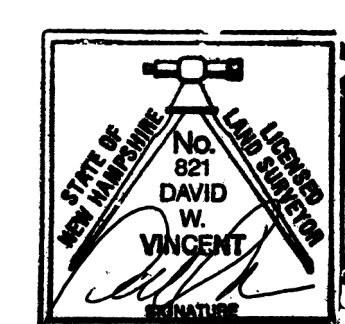
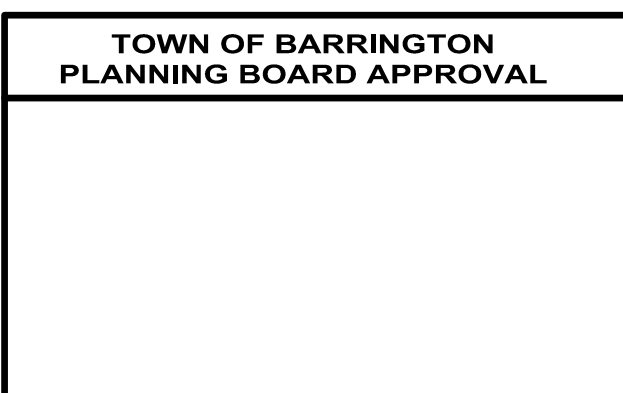
This plan is a condominium instrument under RSA Chapter 356-B and is not a subdivision of land.

I certify that this survey plot is not a subdivision pursuant to this title and that the lines of streets and ways shown are those of public or private streets or ways already established and that no new ways are shown.

I certify: A.) That this site plan depicts the proposed location and dimensions of the improvements shown hereon, specifically units 1 through 80.

B.) That said units are not yet begun construction; and

C.) That this plan is accurate and complies with the provisions of RSA 356-B:20(i) for site plans.



David W. Vincent, LLS No. 821

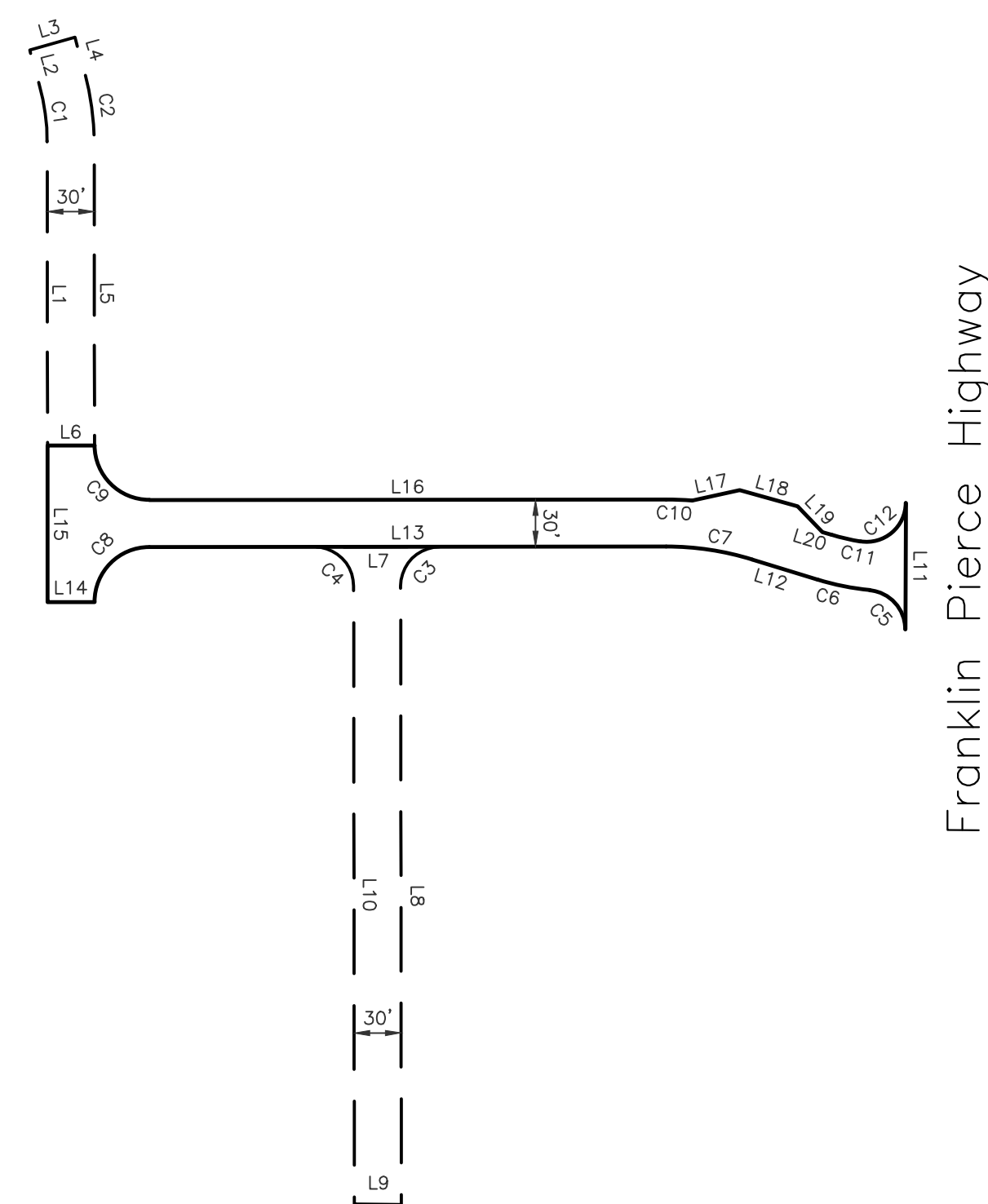
3 Sept. 2020  
Date

NO.	DATE	DESCRIPTION	BY
4			
3			
2			
1			

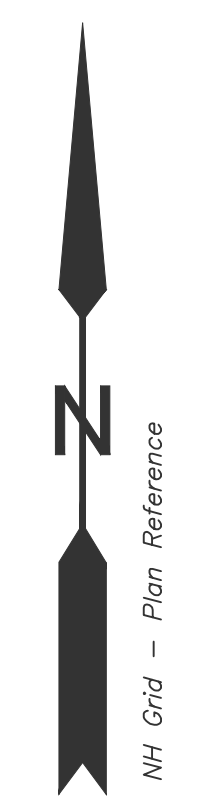
- Legend:**
- C2 See Curve Table
  - L1 See Length Table
  - SCRD Stafford County Registry of Deeds
  - Iron Pipe Found
  - Iron Rod Found
  - ✕ Steel Stake Found
  - Granite Bound Found
  - ⊥ Utility Pole
  - Proposed Waterlines
  - - - Proposed Sewerlines
  - Building Setback
  - - - Jurisdictional Wetlands
  - Culvert
  - Stone Wall

Length Table:		Curve Table:						
LINE	BEARING	DISTANCE	CURVE	ARC LENGTH	RADIUS	DELTA ANGLE	CHORD BEARING	CHORD LENGTH
L1	N64°03'49"W	193.93'	C1	36.23'	135.00'	157°22'41"	N71°45'09"W	36.13'
L2	N79°26'30"W	23.57'	C2	44.29'	165.00'	157°22'41"	S71°45'09"E	44.15'
L3	N09°59'05"E	30.00'	C3	39.27'	25.00'	90°00'00"	S19°03'49"E	35.36'
L4	S79°26'30"E	23.87'	C4	39.27'	25.00'	90°00'00"	S70°56'11"W	35.36'
L5	S64°03'49"E	193.93'	C5	37.01'	25.00'	84°49'43"	S73°46'21"W	33.72'
L6	S25°56'11"W	30.00'	C6	34.15'	185.00'	115°51'31"	S37°17'15"W	34.09'
L7	N25°56'11"E	80.00'	C7	55.80'	185.00'	17°16'49"	S34°34'36"W	55.58'
L8	S64°03'49"E	394.91'	C8	54.98'	35.00'	90°00'00"	S19°03'49"E	49.50'
L9	S26°39'27"W	30.00'	C9	54.98'	35.00'	90°00'00"	N70°56'11"E	49.50'
L10	N64°03'49"W	394.53'	C10	16.61'	215.00'	4°25'31"	N28°08'57"E	16.60'
L11	S63°48'48"E	80.57'	C11	19.02'	135.00'	8°04'24"	N39°10'49"E	19.01'
L12	S43°13'01"W	43.86'	C12	43.18'	25.00'	98°57'25"	N14°20'05"W	38.01'
L13	S25°56'11"W	329.94'						
L14	S25°56'11"W	30.00'						
L15	N64°03'49"W	100.00'						
L16	N25°56'11"E	329.94'						
L17	N13°37'39"E	31.13'						
L18	N41°39'11"E	38.40'						
L19	N72°06'22"E	22.83'						
L20	N43°13'01"E	6.04'						

- Abutters**
- 238-16.21  
BVP Homeowners Association  
c/o Correy Piper  
26 Village Place Drive  
Barrington, NH 03825
  - 238/33 & 34  
Gaudiello Family Revocable Trust of 2015  
528 Franklin Pierce Highway  
Barrington, NH 03825  
SCRD 4311-926
  - 238/35 & 35-1  
Richard & Victoria H. Spicole  
528 Franklin Pierce Highway  
Barrington, NH 03825  
SCRD 2889-535
  - 238/36.2  
Waldron B. Haley Living Revocable Trust of 1998  
14 Shakespeare Road  
Nashua, NH 03062-2431
  - 238/37  
Lawrence G. Haley  
2908 French Place  
Austin, TX 78722  
SCRD 2536-698
  - 238/38  
574 Franklin Pierce Highway LLC  
574 Franklin Pierce Highway  
Barrington, NH 03825  
SCRD 4528-469
  - 238/41  
Max Winkler  
559 Calef Highway  
Barrington, NH 03825  
SCRD 3870-283
  - 238/42  
A. William & Jules D'Antillo  
PO Box 474  
Barrington, NH 03825  
SCRD 3129-837
  - 238/44  
Virtuous Realty Inc.  
607 Calef Highway #200  
Barrington, NH 03825  
SCRD 2948-332



Roadway & Easement Details  
1"=100'



**CONDOMINIUM SITE PLAN**  
PREPARED FOR  
**THE CROSSING AT VILLAGE CENTER**  
OF PROPERTY IN THE NAME OF  
**WALDRON B. HALEY REVOCABLE LIVING TRUST OF 1998**  
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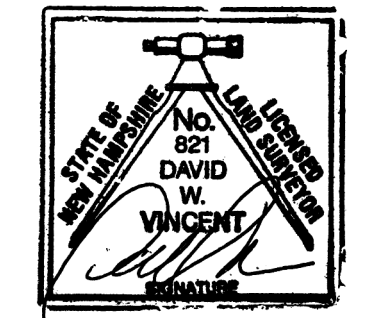


SCALE: 1"= 100' DATE: SEPTEMBER 4, 2020

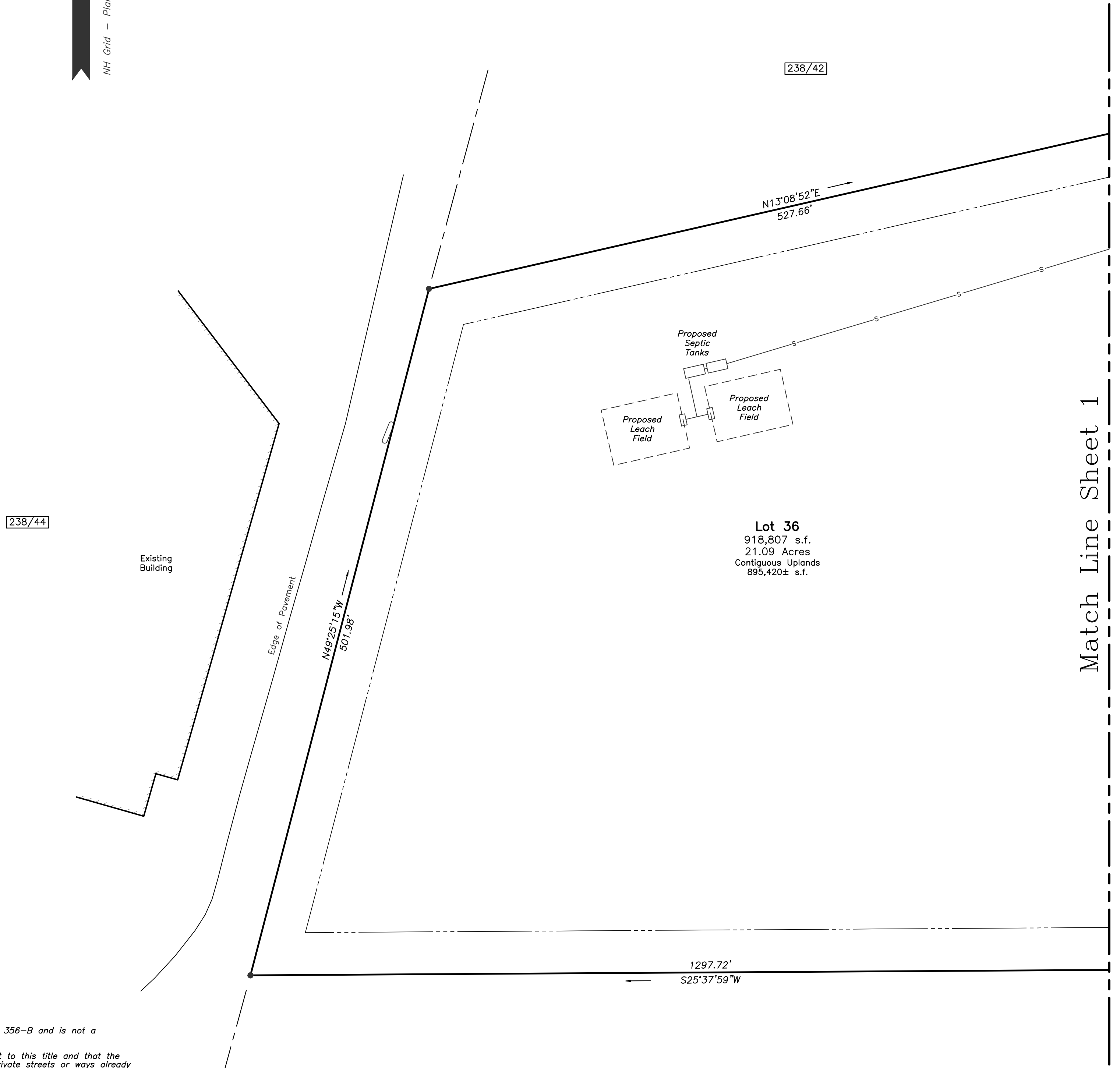
**DAVID W. VINCENT, LLS**  
LAND SURVEYING SERVICES  
PO BOX 1622  
DOVER, NH 03821  
TEL/FAX (603) 664-5786  
www.landsurveyingservices.net

NO.	DATE	DESCRIPTION	BY
4			
3			
2			
1			

This plan is a condominium instrument under RSA Chapter 356-B and is not a subdivision of land.  
I certify that this survey plat is not a subdivision pursuant to this title and that the lines of streets and ways shown are those of public or private streets or ways already established and that no new ways are shown.  
I certify: A.) That this site plan depicts the proposed location and dimensions of the improvements shown hereon, specifically units 1 through 80.  
B.) That said units are not yet begun construction; and  
C.) That this plan is accurate and complies with the provisions of RSA 356-B:20(f) for site plans.



David W. Vincent, LLS No. 821 Date 3 Sept. 2020



Match Line Sheet 1

AUTOMATIC TRAFFIC RECORDER COUNT DATA

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**Accurate Counts**  
978-664-2565

Location : NH Route 9  
Location : East of #545 Franklin Pierce  
City/State: Barrington, NH

8756VL02

Start Time	10/15/2022 Thu	EB		Hour Totals		WB		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		2	44			6	49				
12:15		2	45			3	70				
12:30		1	58			3	56				
12:45		4	56	9	203	4	55	16	230	25	433
01:00		2	59			7	63				
01:15		2	60			1	54				
01:30		2	68			8	58				
01:45		2	87	8	274	4	80	20	255	28	529
02:00		2	75			3	132				
02:15		1	60			1	106				
02:30		1	69			3	90				
02:45		1	87	5	291	0	79	7	407	12	698
03:00		7	74			0	99				
03:15		7	83			5	122				
03:30		5	91			8	143				
03:45		8	90	27	338	1	150	14	514	41	852
04:00		9	90			3	146				
04:15		17	79			3	142				
04:30		20	97			5	149				
04:45		26	77	72	343	5	128	16	565	88	908
05:00		29	86			6	143				
05:15		36	64			10	170				
05:30		66	63			9	112				
05:45		46	60	177	273	15	85	40	510	217	783
06:00		60	64			16	71				
06:15		71	45			33	62				
06:30		96	61			36	63				
06:45		109	35	336	205	38	57	123	253	459	458
07:00		180	33			42	42				
07:15		159	29			135	34				
07:30		139	27			67	47				
07:45		132	24	610	113	77	37	321	160	931	273
08:00		91	16			47	38				
08:15		94	15			62	34				
08:30		85	17			64	29				
08:45		83	11	353	59	43	26	216	127	569	186
09:00		62	13			47	18				
09:15		65	14			42	14				
09:30		54	12			36	11				
09:45		56	11	237	50	59	15	184	58	421	108
10:00		54	6			48	12				
10:15		50	10			41	6				
10:30		49	7			36	19				
10:45		42	8	195	31	54	9	179	46	374	77
11:00		56	3			61	12				
11:15		48	4			48	9				
11:30		58	5			62	9				
11:45		55	2	217	14	64	3	235	33	452	47
Total		2246	2194			1371	3158			3617	5352
Percent		50.6%	49.4%			30.3%	69.7%			40.3%	59.7%

**Accurate Counts**  
978-664-2565

Location : NH Route 9  
Location : East of #545 Franklin Pierce  
City/State: Barrington, NH

8756VL02

Start Time	10/16/2022 Fri	EB		Hour Totals		WB		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		3	54			0	73				
12:15		0	53			4	60				
12:30		0	59			5	62				
12:45		2	53	5	219	7	69	16	264	21	483
01:00		2	51			3	60				
01:15		1	50			4	53				
01:30		2	70			9	59				
01:45		3	79	8	250	1	69	17	241	25	491
02:00		1	96			1	137				
02:15		1	57			4	113				
02:30		0	62			1	99				
02:45		5	79	7	294	4	89	10	438	17	732
03:00		9	68			1	126				
03:15		7	84			6	139				
03:30		11	66			4	140				
03:45		4	56	31	274	4	138	15	543	46	817
04:00		12	66			3	116				
04:15		12	59			2	108				
04:30		15	52			0	111				
04:45		17	57	56	234	4	116	9	451	65	685
05:00		25	56			9	90				
05:15		35	66			6	114				
05:30		54	72			9	102				
05:45		53	46	167	240	8	81	32	387	199	627
06:00		52	52			15	71				
06:15		65	30			25	71				
06:30		107	30			34	47				
06:45		117	28	341	140	39	40	113	229	454	369
07:00		162	34			36	33				
07:15		140	29			131	36				
07:30		126	19			60	41				
07:45		108	25	536	107	67	29	294	139	830	246
08:00		87	11			51	27				
08:15		83	13			57	24				
08:30		89	13			52	18				
08:45		70	14	329	51	45	21	205	90	534	141
09:00		69	16			42	17				
09:15		64	11			41	26				
09:30		78	9			48	4				
09:45		50	7	261	43	48	20	179	67	440	110
10:00		52	12			39	15				
10:15		60	11			45	14				
10:30		48	9			39	18				
10:45		43	12	203	44	45	12	168	59	371	103
11:00		42	7			56	17				
11:15		66	6			62	8				
11:30		75	4			61	9				
11:45		51	3	234	20	56	7	235	41	469	61
Total		2178	1916			1293	2949			3471	4865
Percent		53.2%	46.8%			30.5%	69.5%			41.6%	58.4%

**Accurate Counts**  
978-664-2565

Location : NH Route 9  
Location : East of #545 Franklin Pierce  
City/State: Barrington, NH

8756VL02

Start Time	10/17/2022 Sat	EB		Hour Totals		WB		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		7	67			4	78				
12:15		1	61			8	53				
12:30		3	59			7	54				
12:45		5	69	16	256	4	77	23	262	39	518
01:00		3	54			7	80				
01:15		3	78			4	61				
01:30		0	56			0	44				
01:45		0	53	6	241	1	54	12	239	18	480
02:00		0	61			0	57				
02:15		1	79			0	75				
02:30		3	60			3	73				
02:45		2	63	6	263	1	59	4	264	10	527
03:00		10	44			3	72				
03:15		2	66			6	71				
03:30		4	44			2	63				
03:45		6	43	22	197	2	69	13	275	35	472
04:00		2	58			3	60				
04:15		6	52			1	59				
04:30		6	36			2	53				
04:45		7	41	21	187	3	61	9	233	30	420
05:00		3	48			2	64				
05:15		7	53			3	58				
05:30		12	70			5	53				
05:45		13	43	35	214	5	56	15	231	50	445
06:00		6	48			8	47				
06:15		11	33			5	48				
06:30		20	38			11	44				
06:45		18	37	55	156	8	43	32	182	87	338
07:00		13	33			19	45				
07:15		27	23			15	37				
07:30		32	30			15	34				
07:45		31	14	103	100	18	18	67	134	170	234
08:00		32	15			21	29				
08:15		34	8			25	15				
08:30		37	13			23	29				
08:45		44	10	147	46	31	14	100	87	247	133
09:00		33	11			30	11				
09:15		47	13			35	21				
09:30		56	13			28	23				
09:45		70	4	206	41	49	13	142	68	348	109
10:00		66	8			42	10				
10:15		49	17			56	14				
10:30		67	13			60	9				
10:45		63	11	245	49	52	11	210	44	455	93
11:00		60	11			38	11				
11:15		49	3			51	9				
11:30		60	7			40	9				
11:45		71	2	240	23	73	7	202	36	442	59
Total		1102	1773			829	2055			1931	3828
Percent		38.3%	61.7%			28.7%	71.3%			33.5%	66.5%
Grand Total		5526	5883			3493	8162			9019	14045
Percent		48.4%	51.6%			30.0%	70.0%			39.1%	60.9%

ADT                      ADT 7,688                      AADT 7,688

**Accurate Counts**  
978-664-2565

Location : NH Route 9  
Location : East of #545 Franklin Pierce  
City/State: Barrington, NH

8756VL02

Start Time	10/12/2020		Tue		Wed		Thu		Fri		Sat		Sun		Week Average	
	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB
12:00 AM	*	*	*	*	*	*	9	16	5	16	16	23	*	*	10	18
01:00	*	*	*	*	*	*	8	20	8	17	6	12	*	*	7	16
02:00	*	*	*	*	*	*	5	7	7	10	6	4	*	*	6	7
03:00	*	*	*	*	*	*	27	14	31	15	22	13	*	*	27	14
04:00	*	*	*	*	*	*	72	16	56	9	21	9	*	*	50	11
05:00	*	*	*	*	*	*	177	40	167	32	35	15	*	*	126	29
06:00	*	*	*	*	*	*	336	123	341	113	55	32	*	*	244	89
07:00	*	*	*	*	*	*	<b>610</b>	<b>321</b>	<b>536</b>	<b>294</b>	103	67	*	*	<b>416</b>	<b>227</b>
08:00	*	*	*	*	*	*	353	216	329	205	147	100	*	*	276	174
09:00	*	*	*	*	*	*	237	184	261	179	206	142	*	*	235	168
10:00	*	*	*	*	*	*	195	179	203	168	<b>245</b>	<b>210</b>	*	*	214	186
11:00	*	*	*	*	*	*	217	235	234	235	240	202	*	*	230	224
12:00 PM	*	*	*	*	*	*	203	230	219	264	256	262	*	*	226	252
01:00	*	*	*	*	*	*	274	255	250	241	241	239	*	*	255	245
02:00	*	*	*	*	*	*	291	407	<b>294</b>	438	<b>263</b>	264	*	*	<b>283</b>	370
03:00	*	*	*	*	*	*	338	514	274	<b>543</b>	197	<b>275</b>	*	*	270	<b>444</b>
04:00	*	*	*	*	*	*	<b>343</b>	<b>565</b>	234	451	187	233	*	*	255	416
05:00	*	*	*	*	*	*	273	510	240	387	214	231	*	*	242	376
06:00	*	*	*	*	*	*	205	253	140	229	156	182	*	*	167	221
07:00	*	*	*	*	*	*	113	160	107	139	100	134	*	*	107	144
08:00	*	*	*	*	*	*	59	127	51	90	46	87	*	*	52	101
09:00	*	*	*	*	*	*	50	58	43	67	41	68	*	*	45	64
10:00	*	*	*	*	*	*	31	46	44	59	49	44	*	*	41	50
11:00	*	*	*	*	*	*	14	33	20	41	23	36	*	*	19	37
Lane	0	0	0	0	0	0	4440	4529	4094	4242	2875	2884	0	0	3803	3883
Day	0		0		0		8969		8336		5759		0		7686	
AM Peak	-	-	-	-	-	-	07:00	07:00	07:00	07:00	10:00	10:00	-	-	07:00	07:00
Vol.	-	-	-	-	-	-	610	321	536	294	245	210	-	-	416	227
PM Peak	-	-	-	-	-	-	16:00	16:00	14:00	15:00	14:00	15:00	-	-	14:00	15:00
Vol.	-	-	-	-	-	-	343	565	294	543	263	275	-	-	283	444

Comb. Total	0	0	0	8969	8336	5759	0	7686
ADT	ADT 7,688	AADT 7,688						



SEASONAL ADJUSTMENT DATA

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# New Hampshire DOT

## 02389090: Monthly Hourly Volume for October 2019

**Location ID:** 02389090      **Seasonal Factor Group:** 03  
**County:** STRAFFORD      **Daily Factor Group:**  
**Funcational Class:** 2      **Axle Factor Group:**  
**Location:** Spaulding Tpke N      **Growth Factor Group:**

	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	TOTAL	QC Status
1	184	113	96	195	488	1117	2150	2905	2181	1534	1439	1386	1532	1522	1945	2615	2841	2700	1606	1005	722	482	312	288	31358	Accepted
2	180	106	98	162	457	1108	2149	2991	2153	1565	1415	1454	1532	1613	1986	2513	2931	2734	1592	1093	822	558	382	333	31927	Accepted
3	190	117	82	179	464	1154	2193	2942	2205	1628	1525	1633	1663	1673	2072	2697	2993	2933	1756	1258	893	662	471	320	33703	Accepted
4	216	110	90	162	447	1070	2051	2708	2057	1688	1644	1885	1866	2207	2549	3113	3267	3154	2428	1730	1449	1179	811	548	38429	Accepted
5	319	147	112	112	210	447	855	1266	1744	2179	2234	2501	2334	2250	2136	2144	2184	2048	1731	1509	1097	835	594	391	31379	Accepted
6	205	138	89	89	143	256	538	786	1197	1717	2200	2522	2502	2388	2099	2095	2184	2050	1658	1201	695	463	260	196	27671	Accepted
7	107	75	80	171	501	1153	2141	2864	2172	1609	1577	1579	1658	1689	2021	2598	2624	2711	1418	900	731	557	376	278	31590	Accepted
8	179	96	111	170	482	1124	2230	2961	2238	1499	1414	1449	1513	1575	1919	2631	2958	2734	1699	1082	759	560	345	308	32036	Accepted
9	193	120	96	166	471	1154	2195	2914	2143	1559	1492	1470	1452	1513	1992	2629	2987	2817	1676	1109	901	623	428	329	32429	Accepted
10	221	149	91	171	442	1115	2099	2923	2199	1566	1527	1604	1602	1730	2062	2805	3051	2837	1778	1350	882	657	510	312	33683	Accepted
11	234	159	133	158	384	976	1946	2687	2091	1674	1742	2043	2066	2413	2651	3284	3280	3275	2354	1803	1502	1432	759	477	39523	Accepted
12	319	178	107	89	180	345	591	1088	1601	1970	2477	2531	2637	2425	2251	2222	2261	1981	1712	1447	1144	822	512	372	31262	Accepted
13	242	120	103	71	119	234	489	799	1228	1867	2452	2582	2594	2526	2346	2331	2338	2360	2109	1804	1593	953	465	228	31953	Accepted
14	138	70	76	150	271	779	1508	2119	2071	2101	2462	2369	2311	2508	2587	2922	3157	3098	2117	1535	1006	575	330	252	36512	Accepted
15	115	90	95	168	493	1181	2207	2983	2230	1727	1699	1728	1697	1787	2046	2758	3019	2936	1818	1158	806	571	344	285	33941	Accepted
16	169	108	102	148	484	1139	2175	2957	2195	1592	1513	1489	1535	1605	1933	2773	3032	2874	1676	1051	848	524	394	301	32617	Accepted
17	161	106	95	175	504	1065	1974	2808	2133	1579	1439	1468	1605	1666	1896	2441	2726	2521	1551	1109	817	625	394	333	31191	Accepted
18	200	122	98	179	431	1078	1950	2786	2088	1638	1591	1858	1972	1964	2603	3073	3215	3045	2109	1584	1197	892	569	509	36751	Accepted
19	295	165	125	103	183	407	720	1186	1595	1962	2186	2342	2261	2148	2110	2242	2266	2118	1839	1370	1001	851	595	372	30442	Accepted
20	240	148	82	88	129	219	418	674	1041	1485	1969	2315	2357	2292	2210	2304	2087	1898	1614	1215	702	438	270	218	26413	Accepted
21	122	70	89	160	466	1179	2106	2880	2178	1548	1542	1445	1426	1499	1914	2587	2815	2709	1617	995	736	500	357	273	31213	Accepted
22	163	102	88	168	487	1180	2126	2911	2194	1459	1448	1414	1436	1493	1830	2538	2906	2753	1531	1002	810	494	347	282	31162	Accepted
23	204	119	87	171	463	1117	1994	2834	2072	1456	1389	1393	1416	1542	1860	2568	2815	2668	1633	1064	789	560	412	302	30928	Accepted
24	162	106	106	162	480	1132	2100	2927	2162	1573	1556	1500	1515	1611	1989	2643	3027	2692	1753	1177	852	681	418	335	32659	Accepted
25	205	127	94	180	440	1030	1908	2759	2016	1510	1573	1746	1818	1899	2240	2955	2965	2824	2015	1503	1132	898	567	436	34840	Accepted
26	270	147	113	104	189	399	647	1065	1470	1746	2063	2124	2170	2059	2067	1986	1981	1858	1565	1156	896	733	557	410	27775	Accepted
27	257	154	97	80	104	219	402	545	770	1160	1713	2025	2135	1978	1866	1569	1386	1075	988	733	647	417	301	179	20800	Accepted
28	88	70	70	158	441	1154	2086	2853	2141	1425	1332	1325	1375	1363	1808	2421	2606	2602	1477	901	669	506	330	292	29493	Accepted
29	181	111	75	158	443	1118	2124	2809	2042	1412	1274	1325	1377	1433	1785	2469	2659	2660	1561	1011	715	510	360	290	29902	Accepted
30	198	99	88	148	458	1133	2165	2928	2033	1381	1292	1370	1379	1465	1958	2660	3048	2519	1417	1045	837	566	349	276	30812	Accepted
31	195	104	97	158	463	1056	2040	2770	2115	1408	1350	1294	1485	1481	1802	2463	2719	2401	1498	978	703	579	378	309	29846	Accepted

**October Average**      **31750**  
**Peak Month (Aug.) ADT**      **35989**  
**Seasonal Adjustment**      **1.134**

COVID-19 ADJUSTMENT DATA

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## **2019 Automatic Traffic Recorder Count Data – 8188VOL1**

March ADT: **15,210**

Seasonal Adjustment (Peak Month - August): **1.316**

Annual Growth Rate (1.0%/year): **1.01**

$$V_{pre} = 15,210 \times 1.316 \times 1.01$$

$$V_{pre} = 20,217$$

## **2020 Automatic Traffic Recorder Count Data – 8756VL01**

October ADT: **16,510**

Seasonal Adjustment (Peak Month - August): **1.134**

$$V_{post} = 16,510 \times 1.134$$

$$V_{post} = 17,248$$

## **COVID Adjustment**

$$\frac{V_{pre}}{V_{post}} = \frac{20,217}{17,248} = \mathbf{1.172}$$

**Accurate Counts**  
978-664-2565

Location : Route 125  
Location : South of Scruton Pond Road  
City/State: Barrington, NH

8188VOL1

Start Time	3/7/2019 Thu	SB		Hour Totals		NB		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		7	84			8	85				
12:15		2	87			10	101				
12:30		3	92			18	96				
12:45		4	90	16	353	7	96	43	378	59	731
01:00		1	117			9	110				
01:15		3	85			6	110				
01:30		5	108			1	123				
01:45		2	117	11	427	6	124	22	467	33	894
02:00		3	118			5	100				
02:15		5	119			1	128				
02:30		2	100			5	124				
02:45		4	127	14	464	3	172	14	524	28	988
03:00		9	113			3	171				
03:15		11	113			4	161				
03:30		10	139			13	201				
03:45		16	130	46	495	9	172	29	705	75	1200
04:00		19	138			16	217				
04:15		35	125			11	201				
04:30		34	126			7	189				
04:45		48	129	136	518	15	212	49	819	185	1337
05:00		61	104			16	227				
05:15		93	119			24	208				
05:30		98	96			22	180				
05:45		112	94	364	413	39	180	101	795	465	1208
06:00		139	100			41	133				
06:15		164	78			88	157				
06:30		198	87			95	113				
06:45		236	83	737	348	97	116	321	519	1058	867
07:00		199	43			86	90				
07:15		257	52			123	70				
07:30		209	38			112	60				
07:45		208	36	873	169	122	69	443	289	1316	458
08:00		163	43			105	46				
08:15		150	54			95	56				
08:30		128	30			116	53				
08:45		121	28	562	155	110	70	426	225	988	380
09:00		110	39			111	51				
09:15		88	24			94	58				
09:30		122	27			85	36				
09:45		105	17	425	107	91	33	381	178	806	285
10:00		74	28			90	33				
10:15		94	22			84	37				
10:30		90	19			96	24				
10:45		96	24	354	93	93	25	363	119	717	212
11:00		93	11			90	36				
11:15		106	12			107	16				
11:30		88	8			108	21				
11:45		96	5	383	36	109	14	414	87	797	123
Total		3921	3578			2606	5105			6527	8683
Percent		52.3%	47.7%			33.8%	66.2%			42.9%	57.1%

**Accurate Counts**  
978-664-2565

Location : Route 125  
Location : South of Scruton Pond Road  
City/State: Barrington, NH

8188VOL1

Start Time	3/8/2019 Fri	SB		Hour Totals		NB		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		5	84			9	121				
12:15		10	100			11	115				
12:30		3	121			21	127				
12:45		3	115	21	420	7	120	48	483	69	903
01:00		1	97			8	140				
01:15		4	101			7	146				
01:30		5	138			7	163				
01:45		3	120	13	456	7	128	29	577	42	1033
02:00		5	127			3	129				
02:15		3	115			2	158				
02:30		4	142			6	171				
02:45		8	121	20	505	5	163	16	621	36	1126
03:00		12	128			9	204				
03:15		12	126			3	198				
03:30		17	143			12	205				
03:45		18	128	59	525	9	189	33	796	92	1321
04:00		20	149			20	201				
04:15		27	146			13	228				
04:30		28	123			7	205				
04:45		36	101	111	519	16	205	56	839	167	1358
05:00		61	116			6	211				
05:15		79	120			29	206				
05:30		98	117			33	188				
05:45		104	95	342	448	39	180	107	785	449	1233
06:00		111	87			59	162				
06:15		176	87			59	156				
06:30		207	93			98	124				
06:45		189	79	683	346	103	111	319	553	1002	899
07:00		219	56			79	112				
07:15		214	57			109	80				
07:30		199	43			136	78				
07:45		232	53	864	209	139	61	463	331	1327	540
08:00		160	37			101	71				
08:15		157	36			114	58				
08:30		146	30			111	54				
08:45		125	35	588	138	129	57	455	240	1043	378
09:00		120	33			98	62				
09:15		134	40			91	61				
09:30		90	25			101	46				
09:45		102	20	446	118	97	47	387	216	833	334
10:00		98	28			87	37				
10:15		89	39			106	35				
10:30		96	28			105	26				
10:45		97	20	380	115	104	42	402	140	782	255
11:00		107	15			108	39				
11:15		86	15			114	28				
11:30		101	17			103	39				
11:45		138	5	432	52	114	11	439	117	871	169
Total		3959	3851			2754	5698			6713	9549
Percent		50.7%	49.3%			32.6%	67.4%			41.3%	58.7%





**Accurate Counts**  
978-664-2565

Location : Route 125  
Location : South of Scruton Pond Road  
City/State: Barrington, NH

8188VOL1

Start Time	3/4/2019		Tue		Wed		Thu		Fri		Sat		Sun		Week Average	
	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB
12:00 AM	*	*	*	*	*	*	16	43	21	48	32	63	*	*	23	51
01:00	*	*	*	*	*	*	11	22	13	29	18	27	*	*	14	26
02:00	*	*	*	*	*	*	14	14	20	16	20	25	*	*	18	18
03:00	*	*	*	*	*	*	46	29	59	33	26	22	*	*	44	28
04:00	*	*	*	*	*	*	136	49	111	56	56	22	*	*	101	42
05:00	*	*	*	*	*	*	364	101	342	107	100	51	*	*	269	86
06:00	*	*	*	*	*	*	737	321	683	319	197	123	*	*	539	254
07:00	*	*	*	*	*	*	<b>873</b>	<b>443</b>	<b>864</b>	<b>463</b>	256	219	*	*	<b>664</b>	375
08:00	*	*	*	*	*	*	562	426	588	455	346	302	*	*	499	394
09:00	*	*	*	*	*	*	425	381	446	387	432	415	*	*	434	394
10:00	*	*	*	*	*	*	354	363	380	402	454	438	*	*	396	401
11:00	*	*	*	*	*	*	383	414	432	439	<b>551</b>	<b>520</b>	*	*	455	<b>458</b>
12:00 PM	*	*	*	*	*	*	353	378	420	483	<b>498</b>	519	*	*	424	460
01:00	*	*	*	*	*	*	427	467	456	577	458	515	*	*	447	520
02:00	*	*	*	*	*	*	464	524	505	621	439	444	*	*	469	530
03:00	*	*	*	*	*	*	495	705	<b>525</b>	796	459	<b>529</b>	*	*	493	677
04:00	*	*	*	*	*	*	<b>518</b>	<b>819</b>	519	<b>839</b>	489	476	*	*	<b>509</b>	<b>711</b>
05:00	*	*	*	*	*	*	413	795	448	785	413	509	*	*	425	696
06:00	*	*	*	*	*	*	348	519	346	553	358	406	*	*	351	493
07:00	*	*	*	*	*	*	169	289	209	331	235	268	*	*	204	296
08:00	*	*	*	*	*	*	155	225	138	240	161	180	*	*	151	215
09:00	*	*	*	*	*	*	107	178	118	216	132	224	*	*	119	206
10:00	*	*	*	*	*	*	93	119	115	140	95	128	*	*	101	129
11:00	*	*	*	*	*	*	36	87	52	117	72	95	*	*	53	100
Lane Day	0	0	0	0	0	0	7499	7711	7810	8452	6297	6520	0	0	7202	7560
AM Peak Vol.	-	-	-	-	-	-	07:00	07:00	07:00	07:00	11:00	11:00	-	-	07:00	11:00
PM Peak Vol.	-	-	-	-	-	-	16:00	16:00	15:00	16:00	12:00	15:00	-	-	16:00	16:00
Comb. Total	0	0	0	0	0	0	15210	16262	12817	0	14762					
ADT	ADT 14,763	AADT 14,763														

Comb. Total      0                      0                      0                      15210                      16262                      12817                      0                      14762

ADT                      ADT 14,763                      AADT 14,763

# New Hampshire DOT

## 02389090: Monthly Hourly Volume for March 2019

**Location ID:** 02389090      **Seasonal Factor Group:** 03  
**County:** STRAFFORD      **Daily Factor Group:**  
**Funcational Class:** 2      **Axle Factor Group:**  
**Location:** Spaulding Tpke N      **Growth Factor Group:**

	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	TOTAL	QC Status
1	197	98	114	149	390	922	1627	2234	1870	1523	1485	1793	1813	1840	2172	2738	2818	2920	2307	1653	1385	1022	629	426	34125	Accepted
2	270	147	106	77	199	308	571	920	1012	1141	1390	1533	1568	1562	1522	1495	1521	1426	1138	822	658	549	422	282	20639	Accepted
3	186	108	84	66	109	231	401	648	908	1186	1572	1962	2118	2081	2034	2236	2013	1855	1427	915	525	324	211	134	23334	Accepted
4	97	106	77	119	333	566	839	1244	1122	990	925	924	1047	1132	1266	1680	1798	1848	1091	706	548	368	263	223	19312	Accepted
5	207	94	99	172	469	991	2039	2766	2107	1335	1284	1288	1353	1384	1762	2447	2594	2517	1423	1075	663	510	304	250	29133	Accepted
6	223	85	114	164	434	986	2055	2752	1972	1320	1195	1305	1355	1465	1800	2414	2590	2434	1417	1019	722	527	305	250	28903	Accepted
7	199	93	95	185	412	963	2039	2633	1917	1317	1283	1345	1329	1471	1780	2480	2706	2567	1613	1096	835	645	357	296	29656	Accepted
8	238	98	92	158	379	909	1961	2623	2002	1409	1435	1574	1674	1804	2201	2886	2961	3018	2506	1748	1421	960	590	357	35004	Accepted
9	295	152	104	86	191	360	730	1207	1434	1578	1769	1942	1928	1915	1932	1980	1972	1864	1588	1109	836	703	464	359	26498	Accepted
10	198	118	43	43	90	215	387	583	731	1004	1190	1147	1214	1411	1623	1415	1294	1238	1103	908	529	350	238	134	17206	Accepted
11	89	67	58	138	439	940	1849	2705	2017	1382	1315	1386	1421	1435	1684	2493	2532	2398	1390	1031	643	486	282	251	28431	Accepted
12	173	92	91	176	428	984	1975	2673	2096	1391	1281	1291	1327	1524	1746	2505	2667	2402	1433	1069	709	525	332	269	29159	Accepted
13	193	98	103	148	413	960	1985	2731	1998	1349	1306	1354	1331	1455	1802	2486	2582	2524	1548	1031	740	610	324	268	29339	Accepted
14	183	88	115	164	406	953	1912	2726	1995	1387	1364	1330	1335	1555	1817	2561	2755	2566	1583	1133	857	672	399	286	30142	Accepted
15	212	118	110	154	394	850	1796	2495	1948	1382	1389	1585	1750	1812	2184	2768	2982	2928	2284	1651	1256	966	574	390	33978	Accepted
16	286	126	98	92	166	369	597	980	1290	1550	1750	1859	1958	1887	1780	1844	1809	1727	1367	1106	852	736	495	337	25061	Accepted
17	220	140	86	62	104	231	408	618	880	1124	1628	1957	2114	2060	2041	1990	1830	1817	1491	1045	674	436	261	182	23399	Accepted
18	109	83	78	155	417	977	1919	2693	1953	1333	1283	1305	1315	1449	1672	2379	2567	2415	1412	860	633	432	287	262	27988	Accepted
19	186	83	110	174	428	996	1965	2800	2051	1335	1200	1318	1239	1360	1634	2433	2590	2521	1442	1041	669	511	335	231	28652	Accepted
20	180	83	117	162	423	992	1922	2701	2021	1332	1325	1278	1330	1365	1763	2382	2609	2481	1478	1074	740	529	327	266	28880	Accepted
21	201	103	117	175	421	955	1946	2695	1880	1397	1258	1326	1433	1490	1845	2451	2676	2465	1555	1069	794	651	368	259	29530	Accepted
22	203	93	102	166	391	870	1747	2419	1758	1312	1291	1418	1501	1584	1911	2510	2577	2551	2186	1528	1028	797	478	378	30799	Accepted
23	245	132	90	79	157	331	726	960	1202	1391	1675	1751	1779	1865	1808	1784	1651	1678	1375	966	763	713	437	332	23890	Accepted
24	225	112	79	59	93	238	497	683	884	1228	1654	1969	2101	2053	2000	2109	2046	1826	1413	1047	691	408	251	178	23844	Accepted
25	98	66	71	143	438	1000	1979	2720	2005	1280	1247	1287	1283	1358	1687	2347	2527	2381	1403	953	592	435	291	229	27820	Accepted
26	198	87	106	153	431	1026	1969	2774	1983	1379	1276	1277	1317	1362	1729	2384	2553	2461	1417	1080	683	529	351	228	28753	Accepted
27	193	91	92	168	432	1044	1994	2731	2016	1370	1240	1281	1338	1407	1727	2412	2629	2507	1489	1007	752	524	341	260	29045	Accepted
28	189	103	97	163	409	1014	2013	2754	2033	1355	1274	1306	1374	1438	1751	2478	2659	2489	1612	1084	803	625	393	266	29682	Accepted
29	183	91	112	163	394	909	1868	2571	1952	1370	1382	1445	1569	1699	2043	2658	2742	2552	1975	1508	1002	758	549	380	31875	Accepted
30	266	134	109	81	148	356	584	908	1221	1422	1635	1777	1814	1728	1763	1668	1623	1618	1265	991	737	661	440	326	23275	Accepted
31	199	142	84	53	90	220	404	527	753	1051	1450	1836	1906	1879	1914	1750	1520	1349	1039	762	568	386	240	165	20287	Accepted

**March Average**      **27343**  
**Peak Month (Aug.) ADT**      **35989**  
**Seasonal Adjustment**      **1.316**

**Accurate Counts**  
978-664-2565

Location : NH Route 125  
Location : South of Scranton Pond Road  
City/State: Barrington, NH

8756VL01

Start Time	10/15/2022 Thu	SB		Hour Totals		NB		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		2	106			5	109				
12:15		8	121			4	120				
12:30		3	119			7	105				
12:45		2	122	15	468	8	117	24	451	39	919
01:00		6	109			12	116				
01:15		5	111			6	114				
01:30		4	140			8	116				
01:45		4	137	19	497	9	109	35	455	54	952
02:00		3	139			4	136				
02:15		4	128			3	168				
02:30		4	159			2	150				
02:45		6	144	17	570	5	197	14	651	31	1221
03:00		13	148			5	192				
03:15		11	184			10	183				
03:30		12	184			10	181				
03:45		20	141	56	657	12	239	37	795	93	1452
04:00		22	162			2	226				
04:15		27	151			8	214				
04:30		28	153			20	213				
04:45		43	157	120	623	12	202	42	855	162	1478
05:00		65	174			29	229				
05:15		93	129			44	183				
05:30		126	161			40	192				
05:45		108	156	392	620	33	140	146	744	538	1364
06:00		131	112			46	141				
06:15		158	124			74	123				
06:30		219	92			84	129				
06:45		206	80	714	408	131	97	335	490	1049	898
07:00		202	59			98	89				
07:15		200	44			110	69				
07:30		213	52			145	63				
07:45		212	55	827	210	127	63	480	284	1307	494
08:00		175	41			102	64				
08:15		142	42			97	59				
08:30		122	49			119	53				
08:45		116	26	555	158	119	55	437	231	992	389
09:00		141	34			118	32				
09:15		109	24			105	38				
09:30		95	19			74	29				
09:45		100	22	445	99	123	30	420	129	865	228
10:00		85	18			98	16				
10:15		109	24			98	30				
10:30		117	17			88	24				
10:45		102	19	413	78	96	34	380	104	793	182
11:00		109	10			93	25				
11:15		111	8			134	18				
11:30		113	7			108	16				
11:45		125	1	458	26	112	20	447	79	905	105
Total		4031	4414			2797	5268			6828	9682
Percent		47.7%	52.3%			34.7%	65.3%			41.4%	58.6%

**Accurate Counts**  
978-664-2565

Location : NH Route 125  
Location : South of Scranton Pond Road  
City/State: Barrington, NH

8756VL01

Start Time	10/16/2022 Fri	SB		Hour Totals		NB		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		6	97			3	116				
12:15		5	120			9	110				
12:30		5	131			11	128				
12:45		9	108	25	456	7	127	30	481	55	937
01:00		5	120			6	136				
01:15		7	120			10	133				
01:30		7	139			11	115				
01:45		3	100	22	479	7	129	34	513	56	992
02:00		3	146			6	139				
02:15		10	123			3	151				
02:30		5	154			2	155				
02:45		5	114	23	537	10	201	21	646	44	1183
03:00		16	148			11	198				
03:15		11	147			6	173				
03:30		10	192			11	184				
03:45		17	161	54	648	16	202	44	757	98	1405
04:00		24	137			7	202				
04:15		23	143			12	220				
04:30		40	160			14	199				
04:45		47	136	134	576	16	214	49	835	183	1411
05:00		61	148			29	180				
05:15		79	145			28	157				
05:30		100	120			30	175				
05:45		109	103	349	516	42	141	129	653	478	1169
06:00		114	91			53	134				
06:15		141	98			52	136				
06:30		189	86			89	106				
06:45		202	68	646	343	123	95	317	471	963	814
07:00		151	51			84	89				
07:15		200	51			105	75				
07:30		176	59			136	52				
07:45		176	49	703	210	132	61	457	277	1160	487
08:00		142	29			96	55				
08:15		135	33			96	37				
08:30		130	38			115	38				
08:45		102	33	509	133	89	52	396	182	905	315
09:00		99	22			89	34				
09:15		101	21			88	46				
09:30		112	23			103	51				
09:45		108	24	420	90	102	41	382	172	802	262
10:00		92	21			86	17				
10:15		114	18			88	42				
10:30		117	16			97	40				
10:45		107	17	430	72	116	33	387	132	817	204
11:00		109	11			91	30				
11:15		110	10			101	17				
11:30		108	12			145	27				
11:45		151	9	478	42	114	22	451	96	929	138
Total		3793	4102			2697	5215			6490	9317
Percent		48.0%	52.0%			34.1%	65.9%			41.1%	58.9%





# New Hampshire DOT

## 02389090: Monthly Hourly Volume for October 2019

**Location ID:** 02389090      **Seasonal Factor Group:** 03  
**County:** STRAFFORD      **Daily Factor Group:**  
**Funcational Class:** 2      **Axle Factor Group:**  
**Location:** Spaulding Tpke N      **Growth Factor Group:**

	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	TOTAL	QC Status
1	184	113	96	195	488	1117	2150	2905	2181	1534	1439	1386	1532	1522	1945	2615	2841	2700	1606	1005	722	482	312	288	31358	Accepted
2	180	106	98	162	457	1108	2149	2991	2153	1565	1415	1454	1532	1613	1986	2513	2931	2734	1592	1093	822	558	382	333	31927	Accepted
3	190	117	82	179	464	1154	2193	2942	2205	1628	1525	1633	1663	1673	2072	2697	2993	2933	1756	1258	893	662	471	320	33703	Accepted
4	216	110	90	162	447	1070	2051	2708	2057	1688	1644	1885	1866	2207	2549	3113	3267	3154	2428	1730	1449	1179	811	548	38429	Accepted
5	319	147	112	112	210	447	855	1266	1744	2179	2234	2501	2334	2250	2136	2144	2184	2048	1731	1509	1097	835	594	391	31379	Accepted
6	205	138	89	89	143	256	538	786	1197	1717	2200	2522	2502	2388	2099	2095	2184	2050	1658	1201	695	463	260	196	27671	Accepted
7	107	75	80	171	501	1153	2141	2864	2172	1609	1577	1579	1658	1689	2021	2598	2624	2711	1418	900	731	557	376	278	31590	Accepted
8	179	96	111	170	482	1124	2230	2961	2238	1499	1414	1449	1513	1575	1919	2631	2958	2734	1699	1082	759	560	345	308	32036	Accepted
9	193	120	96	166	471	1154	2195	2914	2143	1559	1492	1470	1452	1513	1992	2629	2987	2817	1676	1109	901	623	428	329	32429	Accepted
10	221	149	91	171	442	1115	2099	2923	2199	1566	1527	1604	1602	1730	2062	2805	3051	2837	1778	1350	882	657	510	312	33683	Accepted
11	234	159	133	158	384	976	1946	2687	2091	1674	1742	2043	2066	2413	2651	3284	3280	3275	2354	1803	1502	1432	759	477	39523	Accepted
12	319	178	107	89	180	345	591	1088	1601	1970	2477	2531	2637	2425	2251	2222	2261	1981	1712	1447	1144	822	512	372	31262	Accepted
13	242	120	103	71	119	234	489	799	1228	1867	2452	2582	2594	2526	2346	2331	2338	2360	2109	1804	1593	953	465	228	31953	Accepted
14	138	70	76	150	271	779	1508	2119	2071	2101	2462	2369	2311	2508	2587	2922	3157	3098	2117	1535	1006	575	330	252	36512	Accepted
15	115	90	95	168	493	1181	2207	2983	2230	1727	1699	1728	1697	1787	2046	2758	3019	2936	1818	1158	806	571	344	285	33941	Accepted
16	169	108	102	148	484	1139	2175	2957	2195	1592	1513	1489	1535	1605	1933	2773	3032	2874	1676	1051	848	524	394	301	32617	Accepted
17	161	106	95	175	504	1065	1974	2808	2133	1579	1439	1468	1605	1666	1896	2441	2726	2521	1551	1109	817	625	394	333	31191	Accepted
18	200	122	98	179	431	1078	1950	2786	2088	1638	1591	1858	1972	1964	2603	3073	3215	3045	2109	1584	1197	892	569	509	36751	Accepted
19	295	165	125	103	183	407	720	1186	1595	1962	2186	2342	2261	2148	2110	2242	2266	2118	1839	1370	1001	851	595	372	30442	Accepted
20	240	148	82	88	129	219	418	674	1041	1485	1969	2315	2357	2292	2210	2304	2087	1898	1614	1215	702	438	270	218	26413	Accepted
21	122	70	89	160	466	1179	2106	2880	2178	1548	1542	1445	1426	1499	1914	2587	2815	2709	1617	995	736	500	357	273	31213	Accepted
22	163	102	88	168	487	1180	2126	2911	2194	1459	1448	1414	1436	1493	1830	2538	2906	2753	1531	1002	810	494	347	282	31162	Accepted
23	204	119	87	171	463	1117	1994	2834	2072	1456	1389	1393	1416	1542	1860	2568	2815	2668	1633	1064	789	560	412	302	30928	Accepted
24	162	106	106	162	480	1132	2100	2927	2162	1573	1556	1500	1515	1611	1989	2643	3027	2692	1753	1177	852	681	418	335	32659	Accepted
25	205	127	94	180	440	1030	1908	2759	2016	1510	1573	1746	1818	1899	2240	2955	2965	2824	2015	1503	1132	898	567	436	34840	Accepted
26	270	147	113	104	189	399	647	1065	1470	1746	2063	2124	2170	2059	2067	1986	1981	1858	1565	1156	896	733	557	410	27775	Accepted
27	257	154	97	80	104	219	402	545	770	1160	1713	2025	2135	1978	1866	1569	1386	1075	988	733	647	417	301	179	20800	Accepted
28	88	70	70	158	441	1154	2086	2853	2141	1425	1332	1325	1375	1363	1808	2421	2606	2602	1477	901	669	506	330	292	29493	Accepted
29	181	111	75	158	443	1118	2124	2809	2042	1412	1274	1325	1377	1433	1785	2469	2659	2660	1561	1011	715	510	360	290	29902	Accepted
30	198	99	88	148	458	1133	2165	2928	2033	1381	1292	1370	1379	1465	1958	2660	3048	2519	1417	1045	837	566	349	276	30812	Accepted
31	195	104	97	158	463	1056	2040	2770	2115	1408	1350	1294	1485	1481	1802	2463	2719	2401	1498	978	703	579	378	309	29846	Accepted

**October Average**      **31750**  
**Peak Month (Aug.) ADT**      **35989**  
**Seasonal Adjustment**      **1.134**

VEHICLE TRAVEL SPEED DATA

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**Accurate Counts**  
978-664-2565

Location : NH Route 9  
Location : East of #545 Franklin Pierce  
City/State: Barrington, NH

8756SP02

**EB**

Start Time	15	20	25	30	35	40	45	50	55	60	65	70	75	999	Total
10/15/20	0	0	0	0	0	3	3	2	1	0	0	0	0	0	9
01:00	0	0	0	0	0	4	4	0	0	0	0	0	0	0	8
02:00	0	0	0	0	0	2	0	2	1	0	0	0	0	0	5
03:00	0	0	0	1	2	3	6	7	7	1	0	0	0	0	27
04:00	0	0	0	0	0	8	29	17	16	2	0	0	0	0	72
05:00	0	0	0	0	7	12	69	64	21	3	1	0	0	0	177
06:00	0	0	0	0	0	54	173	96	9	3	0	0	0	1	336
07:00	0	0	0	0	27	183	286	105	9	0	0	0	0	0	610
08:00	0	0	0	2	16	75	177	74	6	2	1	0	0	0	353
09:00	0	0	1	0	6	53	131	42	3	1	0	0	0	0	237
10:00	1	0	1	1	9	43	103	33	4	0	0	0	0	0	195
11:00	0	0	1	0	3	67	105	37	2	2	0	0	0	0	217
12 PM	0	0	3	0	6	62	99	29	4	0	0	0	0	0	203
13:00	1	1	0	0	10	100	122	34	4	1	0	0	0	1	274
14:00	1	0	0	2	26	78	148	33	3	0	0	0	0	0	291
15:00	0	0	1	4	14	97	158	62	2	0	0	0	0	0	338
16:00	0	0	2	2	7	73	188	66	5	0	0	0	0	0	343
17:00	0	0	0	0	11	53	145	56	6	2	0	0	0	0	273
18:00	0	0	0	0	7	54	101	38	5	0	0	0	0	0	205
19:00	0	1	0	4	11	37	38	20	2	0	0	0	0	0	113
20:00	0	0	0	0	1	22	25	6	4	1	0	0	0	0	59
21:00	0	0	0	0	1	8	26	15	0	0	0	0	0	0	50
22:00	0	0	0	1	2	9	13	5	1	0	0	0	0	0	31
23:00	0	0	0	0	0	2	9	3	0	0	0	0	0	0	14
<b>Total</b>	<b>3</b>	<b>2</b>	<b>9</b>	<b>17</b>	<b>166</b>	<b>1102</b>	<b>2158</b>	<b>846</b>	<b>115</b>	<b>18</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>4440</b>

Daily

- 15th Percentile : 37 MPH
- 50th Percentile : 42 MPH
- 85th Percentile : 46 MPH
- 95th Percentile : 49 MPH

Mean Speed(Average) : 43 MPH

10 MPH Pace Speed : 36-45 MPH

- Number in Pace : 3260
- Percent in Pace : 73.4%
- Number of Vehicles > 40 MPH : 3141
- Percent of Vehicles > 40 MPH : 70.7%

**Accurate Counts**  
978-664-2565

Location : NH Route 9  
Location : East of #545 Franklin Pierce  
City/State: Barrington, NH

8756SP02

**EB**

Start Time	15	20	25	30	35	40	45	50	55	60	65	70	75	999	Total
10/16/20	0	0	0	0	0	3	1	1	0	0	0	0	0	0	5
01:00	0	0	0	0	0	2	4	1	1	0	0	0	0	0	8
02:00	0	0	0	0	0	0	3	3	1	0	0	0	0	0	7
03:00	0	0	0	1	2	8	5	8	5	2	0	0	0	0	31
04:00	0	0	0	1	1	3	23	18	8	2	0	0	0	0	56
05:00	0	0	0	0	3	13	63	68	19	1	0	0	0	0	167
06:00	0	0	0	0	3	76	178	68	15	1	0	0	0	0	341
07:00	0	0	0	0	33	159	263	67	13	1	0	0	0	0	536
08:00	0	0	0	3	16	88	142	68	8	4	0	0	0	0	329
09:00	0	0	0	1	7	80	111	55	7	0	0	0	0	0	261
10:00	0	0	0	2	4	44	112	39	2	0	0	0	0	0	203
11:00	0	0	1	2	19	64	101	40	6	0	0	0	1	0	234
12 PM	0	0	1	1	14	75	96	26	6	0	0	0	0	0	219
13:00	0	0	0	0	23	82	116	23	6	0	0	0	0	0	250
14:00	1	0	1	2	10	83	147	43	6	1	0	0	0	0	294
15:00	1	0	0	2	4	68	134	58	7	0	0	0	0	0	274
16:00	0	0	0	0	13	65	112	38	6	0	0	0	0	0	234
17:00	1	0	0	1	5	90	109	29	5	0	0	0	0	0	240
18:00	0	2	0	1	7	36	72	19	3	0	0	0	0	0	140
19:00	0	0	1	0	5	44	44	13	0	0	0	0	0	0	107
20:00	0	0	0	0	1	18	21	10	1	0	0	0	0	0	51
21:00	0	0	0	0	2	16	18	6	0	1	0	0	0	0	43
22:00	0	0	0	0	3	15	17	7	2	0	0	0	0	0	44
23:00	0	0	0	1	0	3	12	3	1	0	0	0	0	0	20
<b>Total</b>	<b>3</b>	<b>2</b>	<b>4</b>	<b>18</b>	<b>175</b>	<b>1135</b>	<b>1904</b>	<b>711</b>	<b>128</b>	<b>13</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>4094</b>

Daily

15th Percentile : 36 MPH  
50th Percentile : 41 MPH  
85th Percentile : 46 MPH  
95th Percentile : 49 MPH

Mean Speed(Average) : 42 MPH  
10 MPH Pace Speed : 36-45 MPH  
Number in Pace : 3039  
Percent in Pace : 74.2%  
Number of Vehicles > 40 MPH : 2757  
Percent of Vehicles > 40 MPH : 67.3%

Accurate Counts  
978-664-2565

Location : NH Route 9  
Location : East of #545 Franklin Pierce  
City/State: Barrington, NH

8756SP02

EB

Start Time	15	20	25	30	35	40	45	50	55	60	65	70	75	999	Total
10/17/20	0	0	0	0	1	3	9	3	0	0	0	0	0	0	16
01:00	0	0	0	0	0	2	3	0	1	0	0	0	0	0	6
02:00	0	0	0	0	0	3	1	1	0	1	0	0	0	0	6
03:00	0	0	0	0	0	6	6	5	3	1	1	0	0	0	22
04:00	0	0	0	0	0	4	6	7	2	2	0	0	0	0	21
05:00	0	0	0	0	0	10	17	7	1	0	0	0	0	0	35
06:00	0	0	0	0	2	8	24	18	3	0	0	0	0	0	55
07:00	0	0	0	0	1	17	63	19	3	0	0	0	0	0	103
08:00	0	0	0	0	7	43	61	31	5	0	0	0	0	0	147
09:00	0	0	1	1	7	51	104	37	5	0	0	0	0	0	206
10:00	0	0	5	0	7	56	127	41	8	1	0	0	0	0	245
11:00	0	0	1	1	2	55	117	52	11	1	0	0	0	0	240
12 PM	0	3	1	0	10	74	126	37	5	0	0	0	0	0	256
13:00	0	0	1	1	6	66	109	48	10	0	0	0	0	0	241
14:00	3	1	2	0	11	52	126	59	8	1	0	0	0	0	263
15:00	0	1	2	1	2	52	94	39	4	2	0	0	0	0	197
16:00	1	0	2	0	4	56	85	35	4	0	0	0	0	0	187
17:00	0	0	0	2	4	53	97	52	6	0	0	0	0	0	214
18:00	0	0	3	0	10	40	69	26	7	0	1	0	0	0	156
19:00	0	0	0	0	4	17	49	22	7	1	0	0	0	0	100
20:00	0	0	0	0	1	13	24	7	1	0	0	0	0	0	46
21:00	0	0	0	0	1	6	18	13	3	0	0	0	0	0	41
22:00	0	0	0	0	1	10	12	18	7	0	0	1	0	0	49
23:00	0	0	0	0	1	8	10	3	0	1	0	0	0	0	23
Total	4	5	18	6	82	705	1357	580	104	11	2	1	0	0	2875

Daily  
 15th Percentile : 37 MPH  
 50th Percentile : 42 MPH  
 85th Percentile : 47 MPH  
 95th Percentile : 49 MPH  
  
 Mean Speed(Average) : 43 MPH  
 10 MPH Pace Speed : 36-45 MPH  
 Number in Pace : 2062  
 Percent in Pace : 71.7%  
 Number of Vehicles > 40 MPH : 2055  
 Percent of Vehicles > 40 MPH : 71.5%

Grand Total	10	9	31	41	423	2942	5419	2137	347	42	4	1	1	2	11409
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Overall  
 15th Percentile : 37 MPH  
 50th Percentile : 42 MPH  
 85th Percentile : 46 MPH  
 95th Percentile : 49 MPH  
  
 Mean Speed(Average) : 42 MPH  
 10 MPH Pace Speed : 36-45 MPH  
 Number in Pace : 8361  
 Percent in Pace : 73.3%  
 Number of Vehicles > 40 MPH : 7953  
 Percent of Vehicles > 40 MPH : 69.7%

Accurate Counts  
978-664-2565

Location : NH Route 9  
Location : East of #545 Franklin Pierce  
City/State: Barrington, NH

8756SP02

WB

Start Time	15	20	25	30	35	40	45	50	55	60	65	70	75	999	Total
10/15/20	0	0	0	0	2	5	4	5	0	0	0	0	0	0	16
01:00	0	0	0	0	2	1	11	2	4	0	0	0	0	0	20
02:00	0	0	0	0	0	3	4	0	0	0	0	0	0	0	7
03:00	0	0	0	0	1	7	5	1	0	0	0	0	0	0	14
04:00	0	0	0	0	4	3	5	3	0	1	0	0	0	0	16
05:00	0	0	0	0	1	7	17	13	1	1	0	0	0	0	40
06:00	0	0	0	1	12	23	58	27	2	0	0	0	0	0	123
07:00	0	0	0	5	19	90	151	48	8	0	0	0	0	0	321
08:00	0	1	0	3	18	48	93	45	8	0	0	0	0	0	216
09:00	0	0	1	0	5	36	81	54	4	3	0	0	0	0	184
10:00	0	0	1	0	17	54	69	30	6	2	0	0	0	0	179
11:00	0	0	0	6	14	69	104	41	1	0	0	0	0	0	235
12 PM	0	0	2	5	24	53	111	32	3	0	0	0	0	0	230
13:00	0	0	17	9	11	52	118	42	6	0	0	0	0	0	255
14:00	0	0	2	12	45	119	160	66	3	0	0	0	0	0	407
15:00	0	1	10	25	52	149	205	68	3	1	0	0	0	0	514
16:00	0	0	1	10	58	188	225	78	5	0	0	0	0	0	565
17:00	0	0	0	4	30	167	234	71	4	0	0	0	0	0	510
18:00	0	0	0	2	9	80	108	54	0	0	0	0	0	0	253
19:00	0	0	1	3	20	53	60	21	2	0	0	0	0	0	160
20:00	0	0	0	1	9	34	62	19	0	2	0	0	0	0	127
21:00	0	0	0	3	7	26	16	6	0	0	0	0	0	0	58
22:00	0	0	0	0	3	14	15	11	2	1	0	0	0	0	46
23:00	0	0	0	0	6	12	4	10	0	1	0	0	0	0	33
Total	0	2	35	89	369	1293	1920	747	62	12	0	0	0	0	4529

Daily  
 15th Percentile : 35 MPH  
 50th Percentile : 41 MPH  
 85th Percentile : 45 MPH  
 95th Percentile : 48 MPH  
 Mean Speed(Average) : 41 MPH  
 10 MPH Pace Speed : 36-45 MPH  
 Number in Pace : 3213  
 Percent in Pace : 70.9%  
 Number of Vehicles > 40 MPH : 2741  
 Percent of Vehicles > 40 MPH : 60.5%

**Accurate Counts**  
978-664-2565

Location : NH Route 9  
Location : East of #545 Franklin Pierce  
City/State: Barrington, NH

8756SP02

**WB**

Start Time	15	20	25	30	35	40	45	50	55	60	65	70	75	999	Total
10/16/20	0	0	0	0	2	5	7	2	0	0	0	0	0	0	16
01:00	0	0	0	0	3	5	7	2	0	0	0	0	0	0	17
02:00	0	0	0	0	1	2	5	1	1	0	0	0	0	0	10
03:00	0	0	0	0	2	8	3	2	0	0	0	0	0	0	15
04:00	0	0	0	0	1	1	4	3	0	0	0	0	0	0	9
05:00	0	0	0	1	4	8	10	5	2	1	1	0	0	0	32
06:00	0	0	0	1	10	30	48	17	6	1	0	0	0	0	113
07:00	0	0	0	0	17	97	127	47	6	0	0	0	0	0	294
08:00	0	1	0	5	9	44	98	44	4	0	0	0	0	0	205
09:00	0	0	3	2	13	53	71	29	8	0	0	0	0	0	179
10:00	0	0	0	0	19	32	76	36	5	0	0	0	0	0	168
11:00	0	1	1	3	33	79	88	27	3	0	0	0	0	0	235
12 PM	0	0	2	8	42	94	93	23	2	0	0	0	0	0	264
13:00	0	0	0	3	13	54	112	57	2	0	0	0	0	0	241
14:00	0	2	10	8	62	142	161	49	3	1	0	0	0	0	438
15:00	0	1	3	10	46	202	218	60	3	0	0	0	0	0	543
16:00	0	0	2	6	21	144	215	61	2	0	0	0	0	0	451
17:00	0	0	2	6	25	125	184	42	3	0	0	0	0	0	387
18:00	0	0	0	5	26	89	86	23	0	0	0	0	0	0	229
19:00	0	0	0	0	4	41	76	17	0	1	0	0	0	0	139
20:00	0	0	0	0	11	25	44	9	1	0	0	0	0	0	90
21:00	0	0	0	0	2	21	35	9	0	0	0	0	0	0	67
22:00	0	0	0	4	5	20	27	3	0	0	0	0	0	0	59
23:00	0	0	0	2	2	18	15	4	0	0	0	0	0	0	41
Total	0	5	23	64	373	1339	1810	572	51	4	1	0	0	0	4242

Daily

- 15th Percentile : 35 MPH
- 50th Percentile : 40 MPH
- 85th Percentile : 44 MPH
- 95th Percentile : 48 MPH

Mean Speed(Average) : 41 MPH

10 MPH Pace Speed : 36-45 MPH

- Number in Pace : 3149
- Percent in Pace : 74.2%
- Number of Vehicles > 40 MPH : 2438
- Percent of Vehicles > 40 MPH : 57.5%

Location : NH Route 9  
Location : East of #545 Franklin Pierce  
City/State: Barrington, NH

8756SP02

WB

Start Time	15	20	25	30	35	40	45	50	55	60	65	70	75	999	Total
10/17/20	0	0	0	0	4	8	8	1	1	0	0	0	1	0	23
01:00	0	0	0	0	3	1	4	4	0	0	0	0	0	0	12
02:00	0	0	1	1	1	1	0	0	0	0	0	0	0	0	4
03:00	0	0	0	0	1	5	7	0	0	0	0	0	0	0	13
04:00	0	0	0	0	1	4	3	1	0	0	0	0	0	0	9
05:00	0	0	0	2	2	5	6	0	0	0	0	0	0	0	15
06:00	0	0	2	2	4	11	11	2	0	0	0	0	0	0	32
07:00	0	0	0	2	2	5	42	12	3	1	0	0	0	0	67
08:00	0	1	0	2	7	22	32	28	7	1	0	0	0	0	100
09:00	0	0	0	1	4	21	73	37	5	1	0	0	0	0	142
10:00	0	0	0	2	10	53	100	41	4	0	0	0	0	0	210
11:00	0	1	1	0	6	37	92	51	14	0	0	0	0	0	202
12 PM	0	1	0	1	7	54	138	53	8	0	0	0	0	0	262
13:00	0	0	2	1	8	66	114	40	8	0	0	0	0	0	239
14:00	0	0	3	2	20	67	113	51	6	2	0	0	0	0	264
15:00	0	1	6	2	10	55	126	68	7	0	0	0	0	0	275
16:00	0	1	1	3	11	59	95	54	9	0	0	0	0	0	233
17:00	0	0	0	1	10	38	102	70	10	0	0	0	0	0	231
18:00	0	0	4	4	12	55	85	19	3	0	0	0	0	0	182
19:00	0	0	0	2	25	40	47	16	4	0	0	0	0	0	134
20:00	0	0	0	0	10	25	31	19	2	0	0	0	0	0	87
21:00	0	0	1	0	2	27	28	6	3	1	0	0	0	0	68
22:00	0	0	0	0	5	7	17	10	4	1	0	0	0	0	44
23:00	0	0	0	1	4	18	8	4	1	0	0	0	0	0	36
Total	0	5	21	29	169	684	1282	587	99	7	0	0	1	0	2884

Daily  
 15th Percentile : 36 MPH  
 50th Percentile : 42 MPH  
 85th Percentile : 47 MPH  
 95th Percentile : 49 MPH  
 Mean Speed(Average) : 42 MPH  
 10 MPH Pace Speed : 36-45 MPH  
 Number in Pace : 1966  
 Percent in Pace : 68.2%  
 Number of Vehicles > 40 MPH : 1976  
 Percent of Vehicles > 40 MPH : 68.5%

Grand Total	0	12	79	182	911	3316	5012	1906	212	23	1	0	1	0	11655
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Overall  
 15th Percentile : 35 MPH  
 50th Percentile : 41 MPH  
 85th Percentile : 46 MPH  
 95th Percentile : 49 MPH  
 Mean Speed(Average) : 41 MPH  
 10 MPH Pace Speed : 36-45 MPH  
 Number in Pace : 8328  
 Percent in Pace : 71.5%  
 Number of Vehicles > 40 MPH : 7155  
 Percent of Vehicles > 40 MPH : 61.4%

**Accurate Counts**  
978-664-2565

Location : NH Route 9  
Location : East of #545 Franklin Pierce  
City/State: Barrington, NH

8756SP02

**EB, WB**

Start Time	15	20	25	30	35	40	45	50	55	60	65	70	75	999	Total
10/15/20	0	0	0	0	2	8	7	7	1	0	0	0	0	0	25
01:00	0	0	0	0	2	5	15	2	4	0	0	0	0	0	28
02:00	0	0	0	0	0	5	4	2	1	0	0	0	0	0	12
03:00	0	0	0	1	3	10	11	8	7	1	0	0	0	0	41
04:00	0	0	0	0	4	11	34	20	16	3	0	0	0	0	88
05:00	0	0	0	0	8	19	86	77	22	4	1	0	0	0	217
06:00	0	0	0	1	12	77	231	123	11	3	0	0	0	1	459
07:00	0	0	0	5	46	273	437	153	17	0	0	0	0	0	931
08:00	0	1	0	5	34	123	270	119	14	2	1	0	0	0	569
09:00	0	0	2	0	11	89	212	96	7	4	0	0	0	0	421
10:00	1	0	2	1	26	97	172	63	10	2	0	0	0	0	374
11:00	0	0	1	6	17	136	209	78	3	2	0	0	0	0	452
12 PM	0	0	5	5	30	115	210	61	7	0	0	0	0	0	433
13:00	1	1	17	9	21	152	240	76	10	1	0	0	0	1	529
14:00	1	0	2	14	71	197	308	99	6	0	0	0	0	0	698
15:00	0	1	11	29	66	246	363	130	5	1	0	0	0	0	852
16:00	0	0	3	12	65	261	413	144	10	0	0	0	0	0	908
17:00	0	0	0	4	41	220	379	127	10	2	0	0	0	0	783
18:00	0	0	0	2	16	134	209	92	5	0	0	0	0	0	458
19:00	0	1	1	7	31	90	98	41	4	0	0	0	0	0	273
20:00	0	0	0	1	10	56	87	25	4	3	0	0	0	0	186
21:00	0	0	0	3	8	34	42	21	0	0	0	0	0	0	108
22:00	0	0	0	1	5	23	28	16	3	1	0	0	0	0	77
23:00	0	0	0	0	6	14	13	13	0	1	0	0	0	0	47
<b>Total</b>	<b>3</b>	<b>4</b>	<b>44</b>	<b>106</b>	<b>535</b>	<b>2395</b>	<b>4078</b>	<b>1593</b>	<b>177</b>	<b>30</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>8969</b>

Daily

- 15th Percentile : 36 MPH
- 50th Percentile : 41 MPH
- 85th Percentile : 46 MPH
- 95th Percentile : 49 MPH

Mean Speed(Average) : 42 MPH

10 MPH Pace Speed : 36-45 MPH

- Number in Pace : 6473
- Percent in Pace : 72.2%
- Number of Vehicles > 40 MPH : 5882
- Percent of Vehicles > 40 MPH : 65.6%

**Accurate Counts**  
978-664-2565

Location : NH Route 9  
Location : East of #545 Franklin Pierce  
City/State: Barrington, NH

8756SP02

**EB, WB**

Start Time	15	20	25	30	35	40	45	50	55	60	65	70	75	999	Total
10/16/20	0	0	0	0	2	8	8	3	0	0	0	0	0	0	21
01:00	0	0	0	0	3	7	11	3	1	0	0	0	0	0	25
02:00	0	0	0	0	1	2	8	4	2	0	0	0	0	0	17
03:00	0	0	0	1	4	16	8	10	5	2	0	0	0	0	46
04:00	0	0	0	1	2	4	27	21	8	2	0	0	0	0	65
05:00	0	0	0	1	7	21	73	73	21	2	1	0	0	0	199
06:00	0	0	0	1	13	106	226	85	21	2	0	0	0	0	454
07:00	0	0	0	0	50	256	390	114	19	1	0	0	0	0	830
08:00	0	1	0	8	25	132	240	112	12	4	0	0	0	0	534
09:00	0	0	3	3	20	133	182	84	15	0	0	0	0	0	440
10:00	0	0	0	2	23	76	188	75	7	0	0	0	0	0	371
11:00	0	1	2	5	52	143	189	67	9	0	0	0	1	0	469
12 PM	0	0	3	9	56	169	189	49	8	0	0	0	0	0	483
13:00	0	0	0	3	36	136	228	80	8	0	0	0	0	0	491
14:00	1	2	11	10	72	225	308	92	9	2	0	0	0	0	732
15:00	1	1	3	12	50	270	352	118	10	0	0	0	0	0	817
16:00	0	0	2	6	34	209	327	99	8	0	0	0	0	0	685
17:00	1	0	2	7	30	215	293	71	8	0	0	0	0	0	627
18:00	0	2	0	6	33	125	158	42	3	0	0	0	0	0	369
19:00	0	0	1	0	9	85	120	30	0	1	0	0	0	0	246
20:00	0	0	0	0	12	43	65	19	2	0	0	0	0	0	141
21:00	0	0	0	0	4	37	53	15	0	1	0	0	0	0	110
22:00	0	0	0	4	8	35	44	10	2	0	0	0	0	0	103
23:00	0	0	0	3	2	21	27	7	1	0	0	0	0	0	61
<b>Total</b>	<b>3</b>	<b>7</b>	<b>27</b>	<b>82</b>	<b>548</b>	<b>2474</b>	<b>3714</b>	<b>1283</b>	<b>179</b>	<b>17</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>8336</b>

Daily

15th Percentile : 36 MPH  
50th Percentile : 41 MPH  
85th Percentile : 45 MPH  
95th Percentile : 49 MPH

Mean Speed(Average) : 42 MPH  
10 MPH Pace Speed : 36-45 MPH  
Number in Pace : 6188  
Percent in Pace : 74.2%  
Number of Vehicles > 40 MPH : 5195  
Percent of Vehicles > 40 MPH : 62.3%



Location : NH Route 9  
Location : East of #545 Franklin Pierce  
City/State: Barrington, NH

8756SP02

EB, WB

Start Time	15	20	25	30	35	40	45	50	55	60	65	70	75	999	Total
10/17/20	0	0	0	0	5	11	17	4	1	0	0	0	1	0	39
01:00	0	0	0	0	3	3	7	4	1	0	0	0	0	0	18
02:00	0	0	1	1	1	4	1	1	0	1	0	0	0	0	10
03:00	0	0	0	0	1	11	13	5	3	1	1	0	0	0	35
04:00	0	0	0	0	1	8	9	8	2	2	0	0	0	0	30
05:00	0	0	0	2	2	15	23	7	1	0	0	0	0	0	50
06:00	0	0	2	2	6	19	35	20	3	0	0	0	0	0	87
07:00	0	0	0	2	3	22	105	31	6	1	0	0	0	0	170
08:00	0	1	0	2	14	65	93	59	12	1	0	0	0	0	247
09:00	0	0	1	2	11	72	177	74	10	1	0	0	0	0	348
10:00	0	0	5	2	17	109	227	82	12	1	0	0	0	0	455
11:00	0	1	2	1	8	92	209	103	25	1	0	0	0	0	442
12 PM	0	4	1	1	17	128	264	90	13	0	0	0	0	0	518
13:00	0	0	3	2	14	132	223	88	18	0	0	0	0	0	480
14:00	3	1	5	2	31	119	239	110	14	3	0	0	0	0	527
15:00	0	2	8	3	12	107	220	107	11	2	0	0	0	0	472
16:00	1	1	3	3	15	115	180	89	13	0	0	0	0	0	420
17:00	0	0	0	3	14	91	199	122	16	0	0	0	0	0	445
18:00	0	0	7	4	22	95	154	45	10	0	1	0	0	0	338
19:00	0	0	0	2	29	57	96	38	11	1	0	0	0	0	234
20:00	0	0	0	0	11	38	55	26	3	0	0	0	0	0	133
21:00	0	0	1	0	3	33	46	19	6	1	0	0	0	0	109
22:00	0	0	0	0	6	17	29	28	11	1	0	1	0	0	93
23:00	0	0	0	1	5	26	18	7	1	1	0	0	0	0	59
Total	4	10	39	35	251	1389	2639	1167	203	18	2	1	1	0	5759

Daily  
 15th Percentile : 36 MPH  
 50th Percentile : 42 MPH  
 85th Percentile : 47 MPH  
 95th Percentile : 49 MPH  
 Mean Speed(Average) : 42 MPH  
 10 MPH Pace Speed : 36-45 MPH  
 Number in Pace : 4028  
 Percent in Pace : 69.9%  
 Number of Vehicles > 40 MPH : 4031  
 Percent of Vehicles > 40 MPH : 70.0%

Grand Total	10	21	110	223	1334	6258	10431	4043	559	65	5	1	2	2	23064
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Overall  
 15th Percentile : 36 MPH  
 50th Percentile : 41 MPH  
 85th Percentile : 46 MPH  
 95th Percentile : 49 MPH  
 Mean Speed(Average) : 42 MPH  
 10 MPH Pace Speed : 36-45 MPH  
 Number in Pace : 16689  
 Percent in Pace : 72.4%  
 Number of Vehicles > 40 MPH : 15108  
 Percent of Vehicles > 40 MPH : 65.5%

GENERAL BACKGROUND TRAFFIC GROWTH

- ***Convenience Store/Gas Station, 491 Calef Highway, Barrington, New Hampshire.***  
This project is currently under construction and includes a 5,000± sf convenience store and an associated gasoline fueling facility.

Traffic volumes associated with the aforementioned specific development project by others were obtained from the *Traffic Impact and Site Access Study* that was prepared by Pernaw & Company, Inc. in support of the project and using trip-generation information available from the Institute of Transportation Engineers (ITE)<sup>4</sup> for the appropriate land use, and were assigned onto the study area roadway network based on existing traffic patterns where no other information was available. No other developments were identified at this time that are expected to result in an increase in traffic within the study area beyond the general background traffic growth rate.

### **General Background Traffic Growth**

A review of historic traffic growth information compiled by NHDOT for the Town of Barrington was undertaken in order to determine general traffic growth trends. Based on a review of this data and consistent with the scoping determination issued by NHDOT for the preparation of this study, a 1.0 percent per year compounded annual background traffic growth rate was used in order to account for future traffic growth and presently unforeseen development within the study area.

### **Roadway Improvement Projects**

The Town of Barrington and NHDOT were contacted in order to determine if there were any planned roadway improvement projects expected to be completed within the study area. Based on these discussions, no roadway improvement projects aside from routine maintenance activities were identified to be planned within the study area at this time.

### **No-Build Traffic Volumes**

The 2020 and 2030 No-Build peak-month peak-hour traffic volumes were developed by applying the 1.0 percent per year compounded annual background traffic growth rate to the 2019 Existing peak-month peak-hour traffic volumes and then adding the traffic associated with the identified specific development project by others. The resulting 2020 No-Build weekday morning, weekday evening and Saturday midday peak-month peak-hour traffic volumes are shown on Figure 4, with the corresponding 2030 No-Build peak-month peak-hour traffic volumes shown on Figure 5.

## **PROJECT-GENERATED TRAFFIC**

Design year (2020 and 2030) Build traffic volumes for the study area roadways were determined by estimating Project-generated traffic volumes and assigning these volumes on the study roadways. The following sections describe the procedures used to develop the Build condition traffic volume networks.

The Project will entail the phased construction of a mixed-use development that will include: 55 single-family homes; 53,200± sf of commercial space that may include retail and office space,

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<sup>4</sup>Ibid 1.

## TRIP-GENERATION CALCULATIONS

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# Multifamily Housing (Low-Rise) (220)

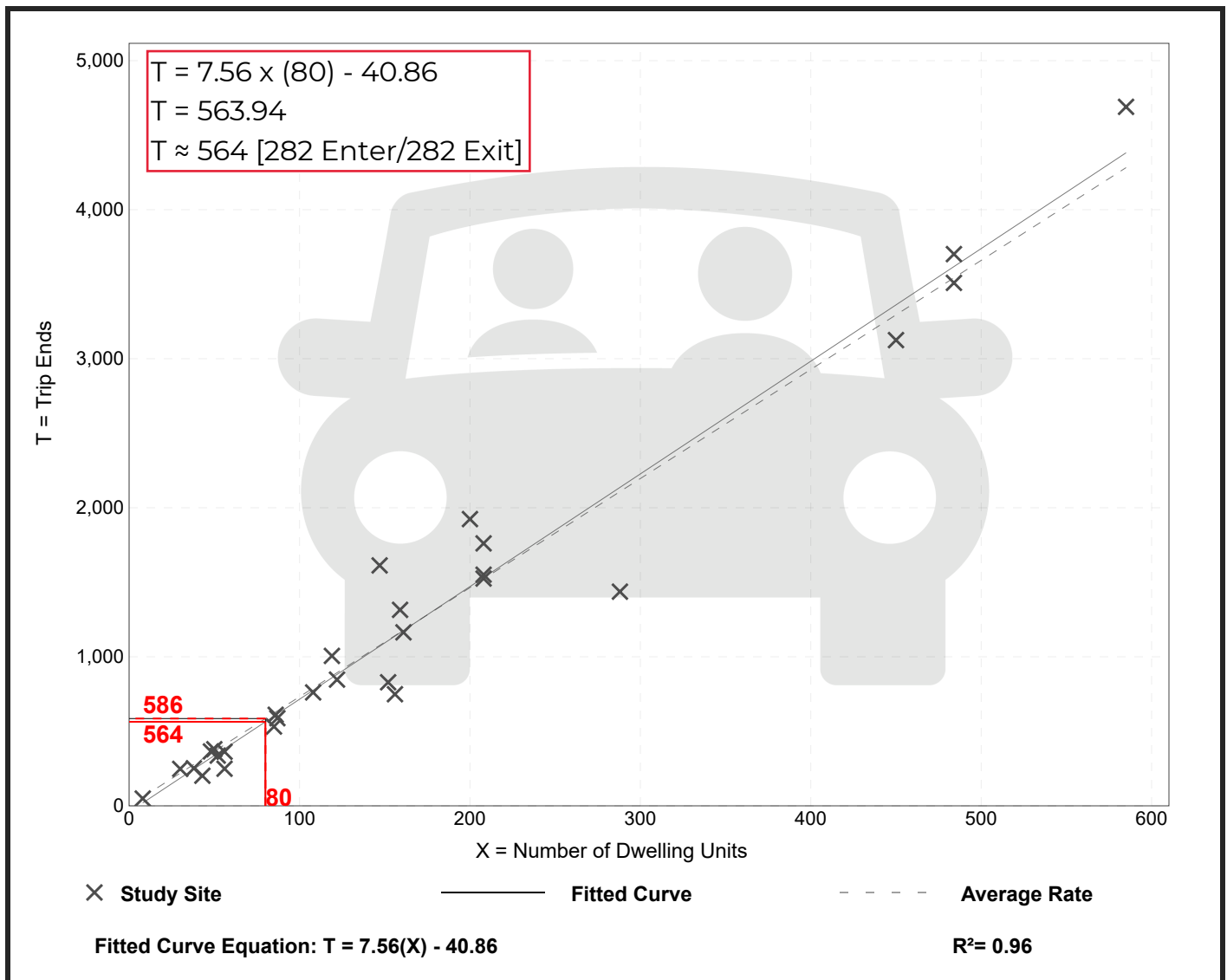
Vehicle Trip Ends vs: Dwelling Units  
On a: Weekday

Setting/Location: General Urban/Suburban  
Number of Studies: 29  
Avg. Num. of Dwelling Units: 168  
Directional Distribution: 50% entering, 50% exiting

## Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
7.32	4.45 - 10.97	1.31

## Data Plot and Equation



# Multifamily Housing (Low-Rise) (220)

Vehicle Trip Ends vs: Dwelling Units

On a: Weekday,

Peak Hour of Adjacent Street Traffic,  
One Hour Between 7 and 9 a.m.

Setting/Location: General Urban/Suburban

Number of Studies: 42

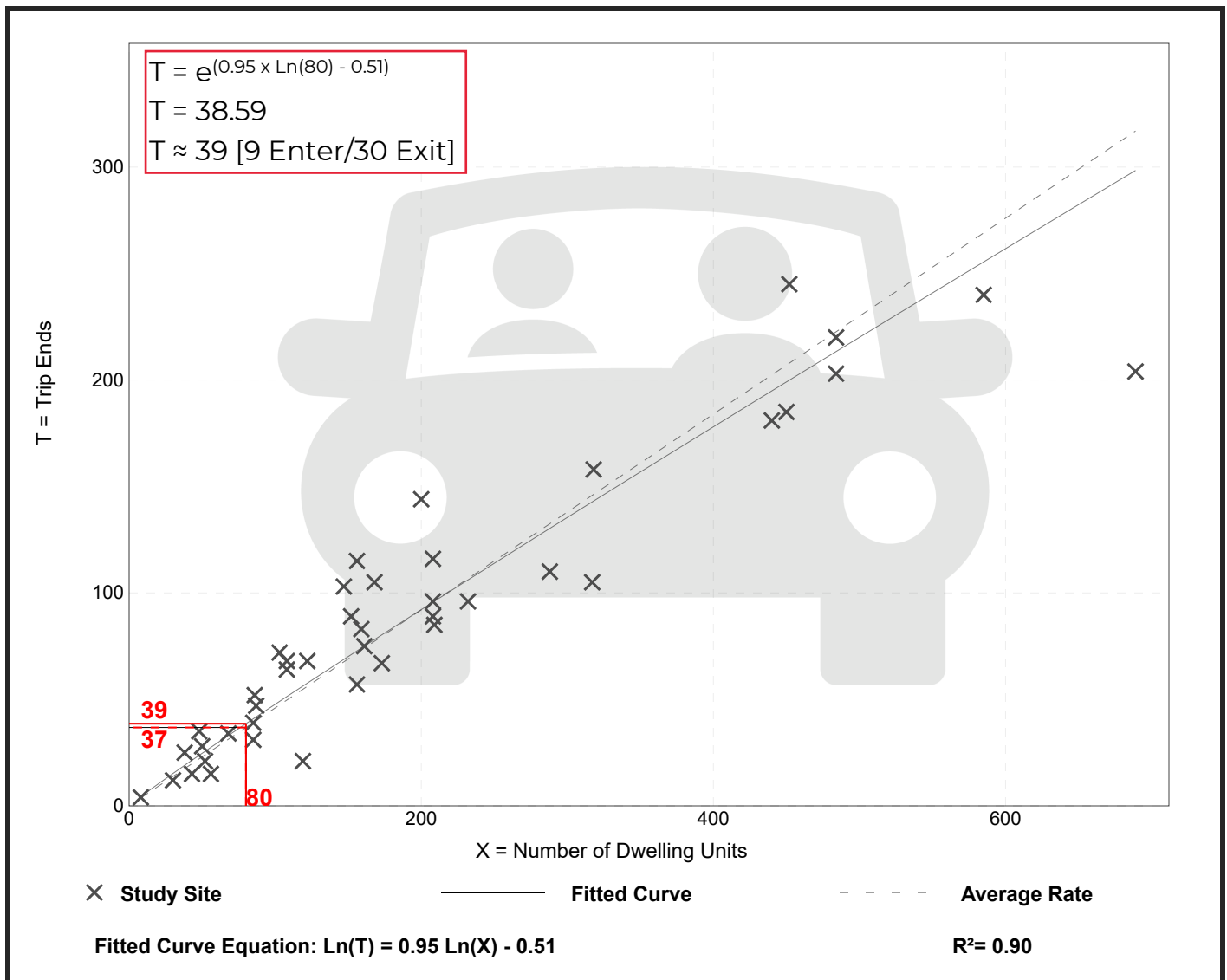
Avg. Num. of Dwelling Units: 199

Directional Distribution: 23% entering, 77% exiting

## Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.46	0.18 - 0.74	0.12

## Data Plot and Equation



# Multifamily Housing (Low-Rise) (220)

Vehicle Trip Ends vs: Dwelling Units

On a: Weekday,

Peak Hour of Adjacent Street Traffic,  
One Hour Between 4 and 6 p.m.

Setting/Location: General Urban/Suburban

Number of Studies: 50

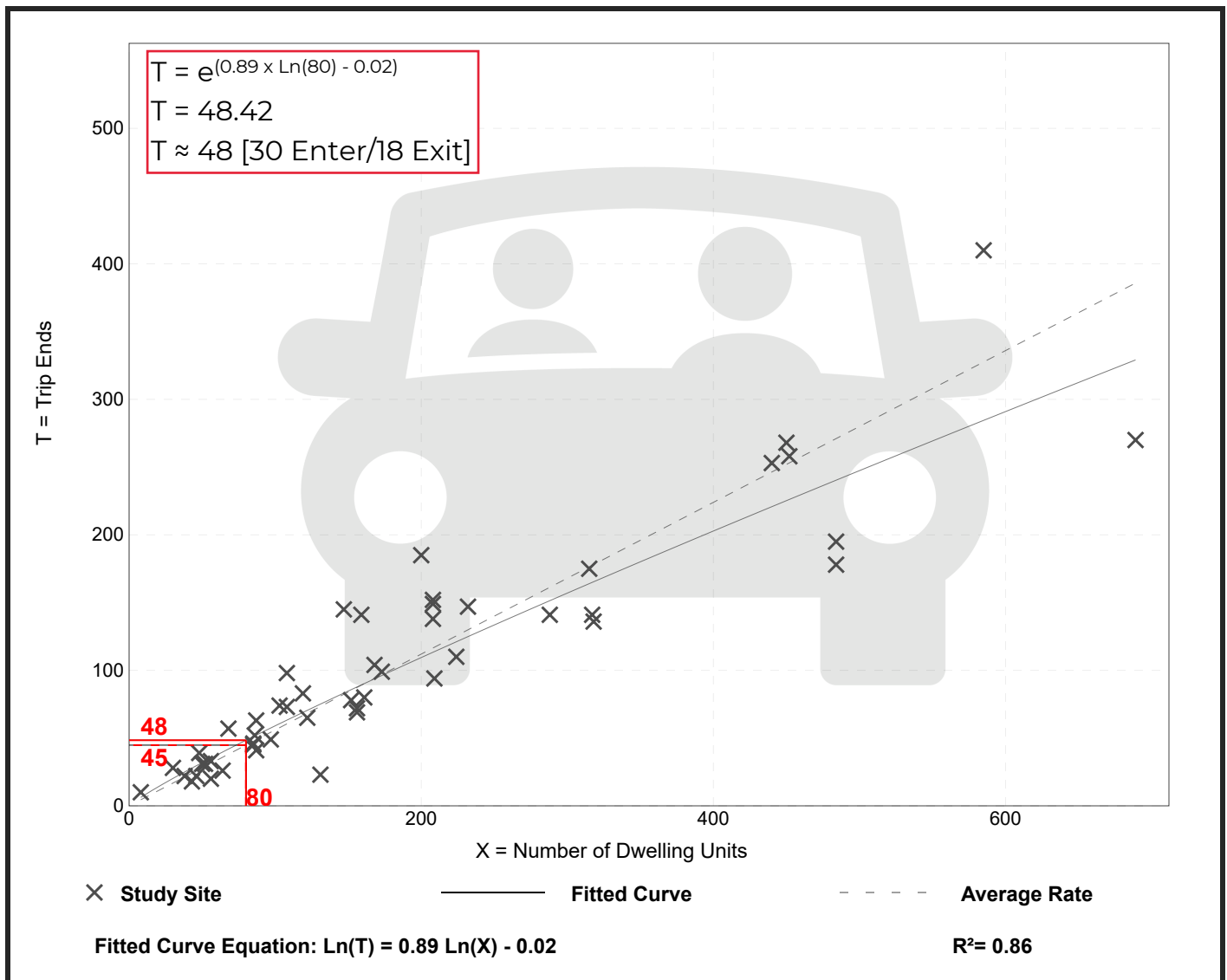
Avg. Num. of Dwelling Units: 187

Directional Distribution: 63% entering, 37% exiting

## Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.56	0.18 - 1.25	0.16

## Data Plot and Equation



# Multifamily Housing (Low-Rise) (220)

Vehicle Trip Ends vs: Dwelling Units  
On a: Saturday

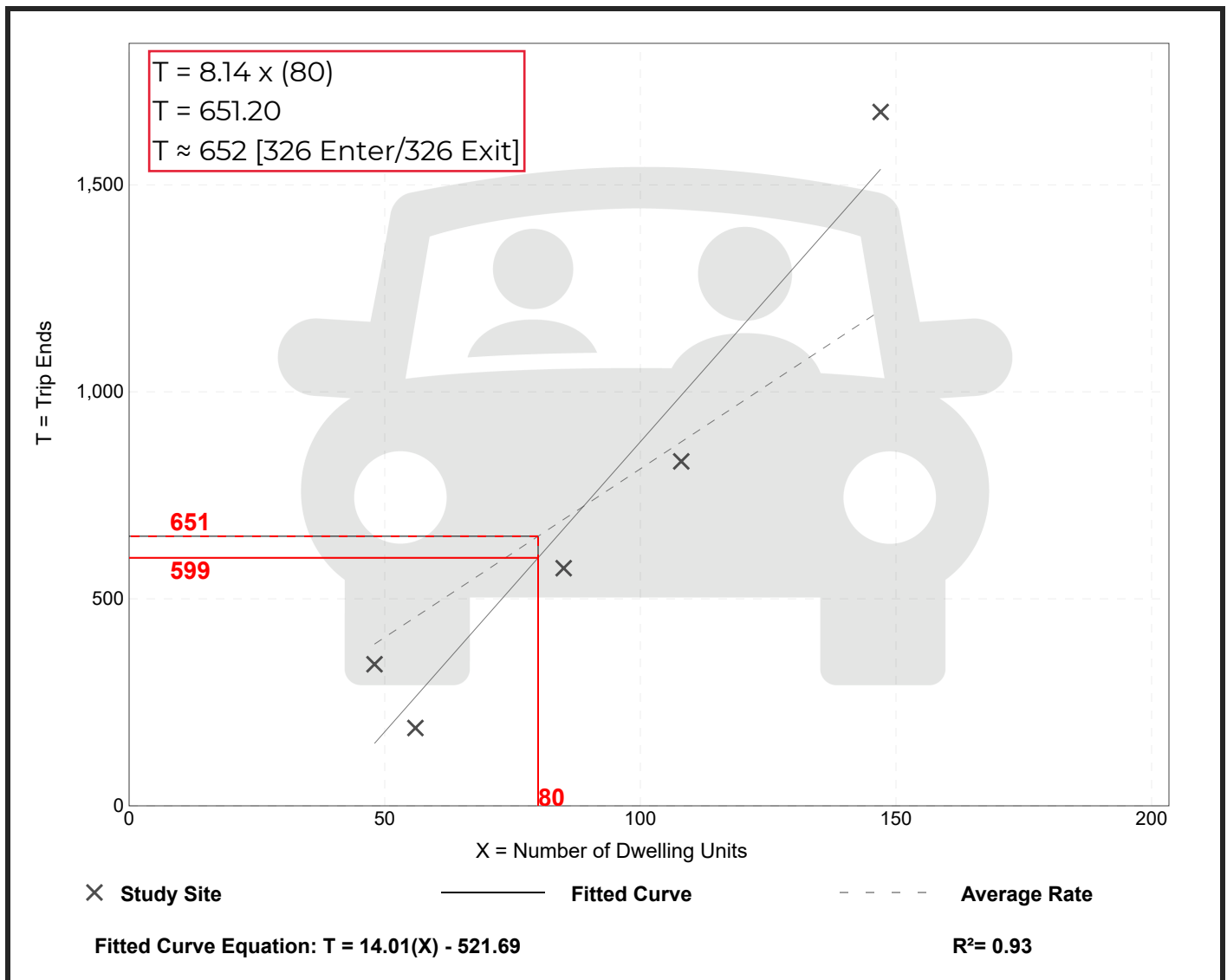
Setting/Location: General Urban/Suburban  
Number of Studies: 5  
Avg. Num. of Dwelling Units: 89  
Directional Distribution: 50% entering, 50% exiting

## Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
8.14	3.36 - 11.40	2.94

## Data Plot and Equation

Caution – Small Sample Size





# Multifamily Housing (Low-Rise) (220)

Vehicle Trip Ends vs: Dwelling Units  
On a: Saturday, Peak Hour of Generator

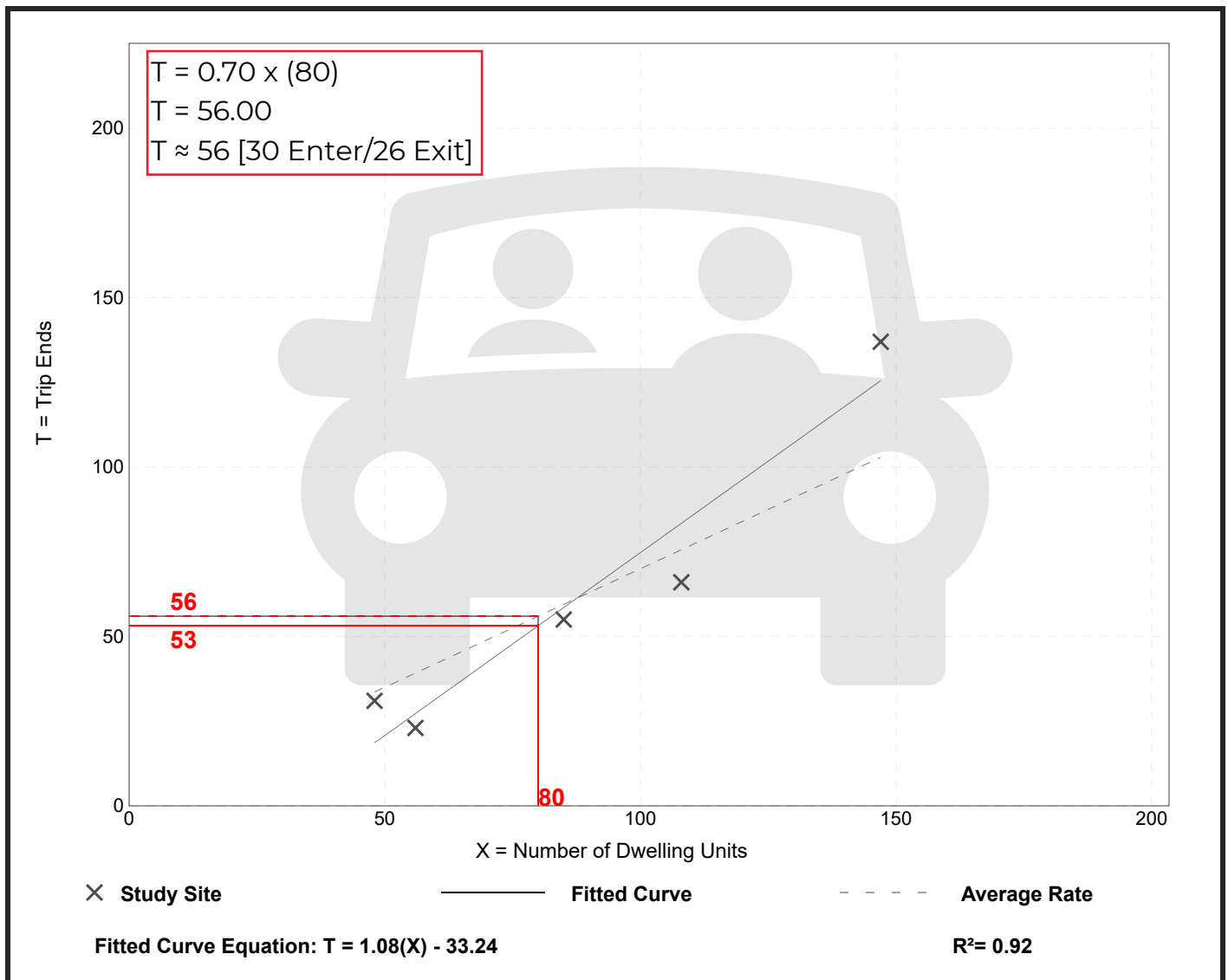
Setting/Location: General Urban/Suburban  
Number of Studies: 5  
Avg. Num. of Dwelling Units: 89  
Directional Distribution: 54% entering, 46% exiting

## Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.70	0.41 - 0.93	0.20

## Data Plot and Equation

Caution – Small Sample Size



**CAPACITY ANALYSIS WORKSHEETS**

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NH Route 9 at the Project Site Roadway

NH Route 9 at the Project Site Roadway

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2021 Opening Year Weekday Morning Peak Hour  
 1: Project Site Roadway & NH Route 9

Intersection						
Int Delay, s/veh	0.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	825	3	6	436	10	20
Future Vol, veh/h	825	3	6	436	10	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	59	59	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	971	4	10	739	11	22

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	975	0	1732
Stage 1	-	-	-	-	973
Stage 2	-	-	-	-	759
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	707	-	97
Stage 1	-	-	-	-	366
Stage 2	-	-	-	-	462
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	707	-	95
Mov Cap-2 Maneuver	-	-	-	-	95
Stage 1	-	-	-	-	366
Stage 2	-	-	-	-	451

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	30
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	176	-	-	707	-
HCM Lane V/C Ratio	0.185	-	-	0.014	-
HCM Control Delay (s)	30	-	-	10.2	0
HCM Lane LOS	D	-	-	B	A
HCM 95th %tile Q(veh)	0.7	-	-	0	-

2021 Opening Year Weekday Evening Peak Hour  
 1: Project Site Roadway & NH Route 9

Intersection						
Int Delay, s/veh	0.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	440	10	20	797	6	12
Future Vol, veh/h	440	10	20	797	6	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	87	87	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	524	12	23	916	7	13

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	536	0	1492
Stage 1	-	-	-	-	530
Stage 2	-	-	-	-	962
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1032	-	136
Stage 1	-	-	-	-	590
Stage 2	-	-	-	-	371
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1032	-	130
Mov Cap-2 Maneuver	-	-	-	-	130
Stage 1	-	-	-	-	590
Stage 2	-	-	-	-	354

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	19.7
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	265	-	-	1032	-
HCM Lane V/C Ratio	0.074	-	-	0.022	-
HCM Control Delay (s)	19.7	-	-	8.6	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

2021 Opening Year Saturday Midday Peak Hour  
 1: Project Site Roadway & NH Route 9

Intersection						
Int Delay, s/veh	0.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	354	10	20	373	9	17
Future Vol, veh/h	354	10	20	373	9	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	83	83	85	85	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	427	12	24	439	10	18

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	439	0	920 433
Stage 1	-	-	-	-	433 -
Stage 2	-	-	-	-	487 -
Critical Hdwy	-	-	4.12	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	-	-	2.218	-	3.518 3.318
Pot Cap-1 Maneuver	-	-	1121	-	301 623
Stage 1	-	-	-	-	654 -
Stage 2	-	-	-	-	618 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1121	-	293 623
Mov Cap-2 Maneuver	-	-	-	-	293 -
Stage 1	-	-	-	-	654 -
Stage 2	-	-	-	-	601 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	13.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	448	-	-	1121	-
HCM Lane V/C Ratio	0.063	-	-	0.021	-
HCM Control Delay (s)	13.6	-	-	8.3	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

2031 Build Weekday Morning Peak Hour  
 1: Project Site Roadway & NH Route 9

Intersection						
Int Delay, s/veh	0.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	911	3	6	481	10	20
Future Vol, veh/h	911	3	6	481	10	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	59	59	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1072	4	10	815	11	22

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	1076	0	1909
Stage 1	-	-	-	-	1074
Stage 2	-	-	-	-	835
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	648	-	75
Stage 1	-	-	-	-	328
Stage 2	-	-	-	-	426
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	648	-	73
Mov Cap-2 Maneuver	-	-	-	-	73
Stage 1	-	-	-	-	328
Stage 2	-	-	-	-	414

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	37.8
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	142	-	-	648	-
HCM Lane V/C Ratio	0.23	-	-	0.016	-
HCM Control Delay (s)	37.8	-	-	10.6	0
HCM Lane LOS	E	-	-	B	A
HCM 95th %tile Q(veh)	0.8	-	-	0	-

2031 Build Weekday Evening Peak Hour  
 1: Project Site Roadway & NH Route 9

Intersection						
Int Delay, s/veh	0.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	486	10	20	880	6	12
Future Vol, veh/h	486	10	20	880	6	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	87	87	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	579	12	23	1011	7	13

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	591	0	1642
Stage 1	-	-	-	-	585
Stage 2	-	-	-	-	1057
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	985	-	110
Stage 1	-	-	-	-	557
Stage 2	-	-	-	-	334
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	985	-	104
Mov Cap-2 Maneuver	-	-	-	-	104
Stage 1	-	-	-	-	557
Stage 2	-	-	-	-	316

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	22.8
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	222	-	-	985	-
HCM Lane V/C Ratio	0.088	-	-	0.023	-
HCM Control Delay (s)	22.8	-	-	8.7	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0.1	-



2031 Build Saturday Midday Peak Hour  
 1: Project Site Roadway & NH Route 9

Intersection						
Int Delay, s/veh	0.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	391	10	20	411	9	17
Future Vol, veh/h	391	10	20	411	9	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	83	83	85	85	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	471	12	24	484	10	18

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	483	0	1009
Stage 1	-	-	-	-	477
Stage 2	-	-	-	-	532
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1080	-	266
Stage 1	-	-	-	-	624
Stage 2	-	-	-	-	589
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1080	-	258
Mov Cap-2 Maneuver	-	-	-	-	258
Stage 1	-	-	-	-	624
Stage 2	-	-	-	-	571

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	14.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	408	-	-	1080	-
HCM Lane V/C Ratio	0.069	-	-	0.022	-
HCM Control Delay (s)	14.5	-	-	8.4	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

## AUXILIARY TURN LANE ANALYSIS

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

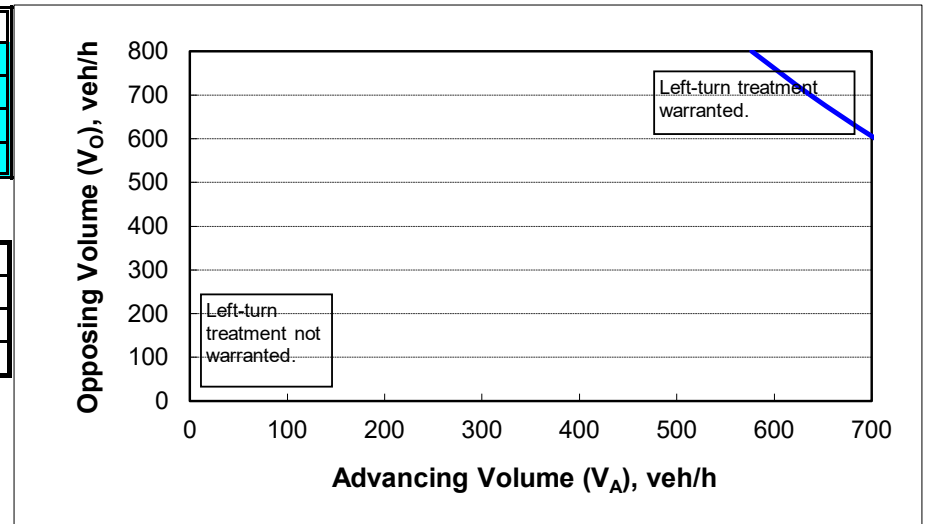
2-lane roadway (English)

INPUT

Variable	Value
85 <sup>th</sup> percentile speed, mph:	46
Percent of left-turns in advancing volume ( $V_A$ ), %:	1%
Advancing volume ( $V_A$ ), veh/h:	442
Opposing volume ( $V_O$ ), veh/h:	825

OUTPUT

Variable	Value
Limiting advancing volume ( $V_A$ ), veh/h:	563
<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.

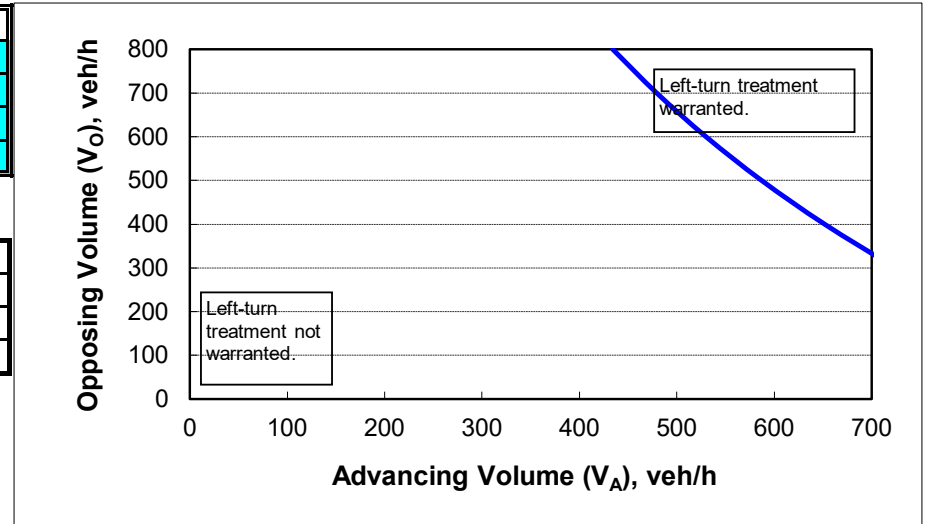
2-lane roadway (English)

INPUT

Variable	Value
85 <sup>th</sup> percentile speed, mph:	46
Percent of left-turns in advancing volume ( $V_A$ ), %:	3%
Advancing volume ( $V_A$ ), veh/h:	817
Opposing volume ( $V_O$ ), veh/h:	440

OUTPUT

Variable	Value
Limiting advancing volume ( $V_A$ ), veh/h:	625
<b>Guidance for determining the need for a major-road left-turn bay:</b>	
<b>Left-turn treatment 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.

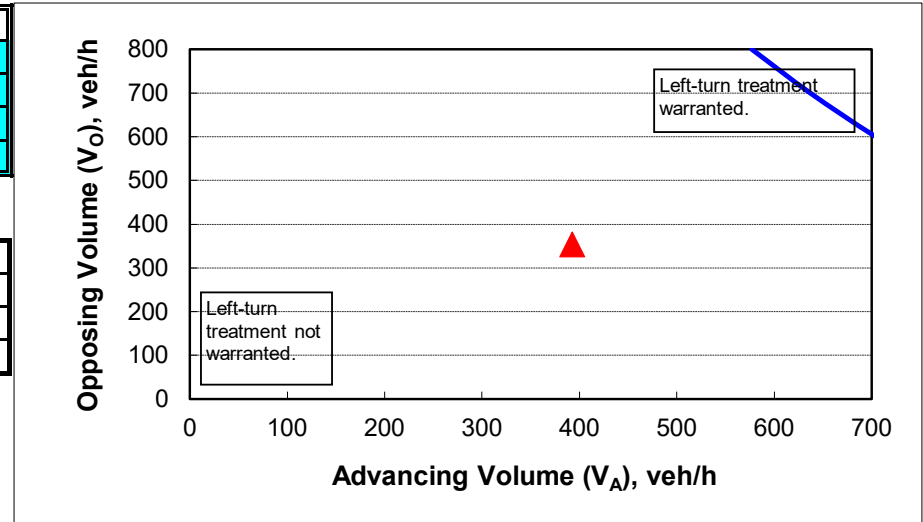
2-lane roadway (English)

INPUT

Variable	Value
85 <sup>th</sup> percentile speed, mph:	46
Percent of left-turns in advancing volume ( $V_A$ ), %:	5%
Advancing volume ( $V_A$ ), veh/h:	393
Opposing volume ( $V_O$ ), veh/h:	354

OUTPUT

Variable	Value
Limiting advancing volume ( $V_A$ ), veh/h:	563
<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.

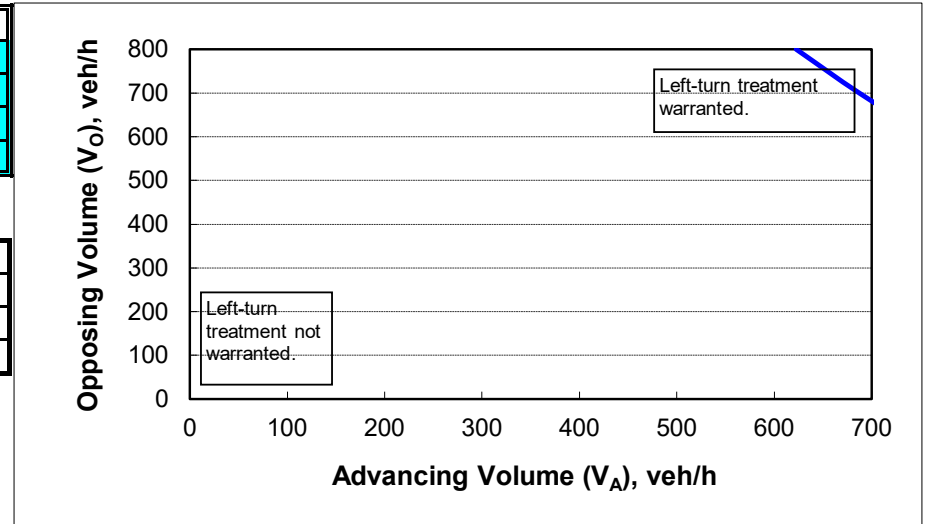
2-lane roadway (English)

INPUT

Variable	Value
85 <sup>th</sup> percentile speed, mph:	46
Percent of left-turns in advancing volume ( $V_A$ ), %:	1%
Advancing volume ( $V_A$ ), veh/h:	487
Opposing volume ( $V_O$ ), veh/h:	911

OUTPUT

Variable	Value
Limiting advancing volume ( $V_A$ ), veh/h:	559
<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.

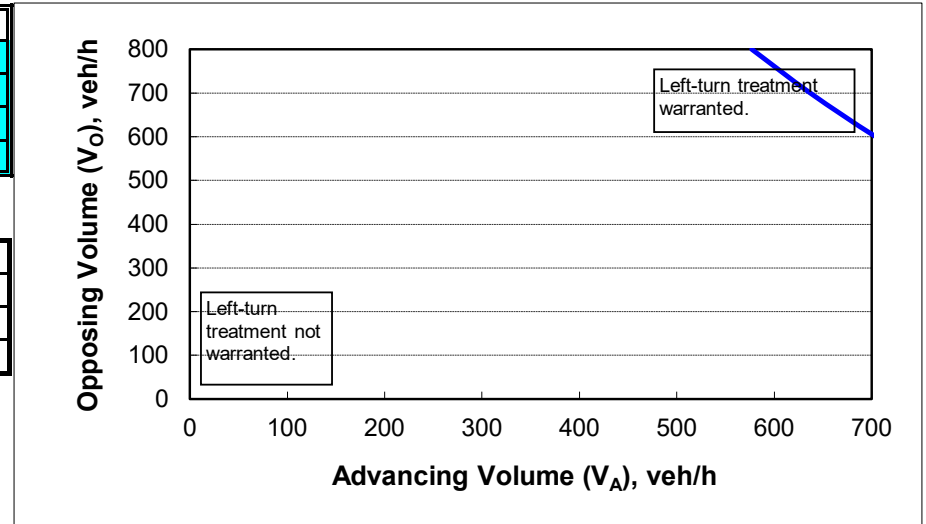
2-lane roadway (English)

INPUT

Variable	Value
85 <sup>th</sup> percentile speed, mph:	46
Percent of left-turns in advancing volume ( $V_A$ ), %:	2%
Advancing volume ( $V_A$ ), veh/h:	900
Opposing volume ( $V_O$ ), veh/h:	486

OUTPUT

Variable	Value
Limiting advancing volume ( $V_A$ ), veh/h:	563
<b>Guidance for determining the need for a major-road left-turn bay:</b>	
<b>Left-turn treatment 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.

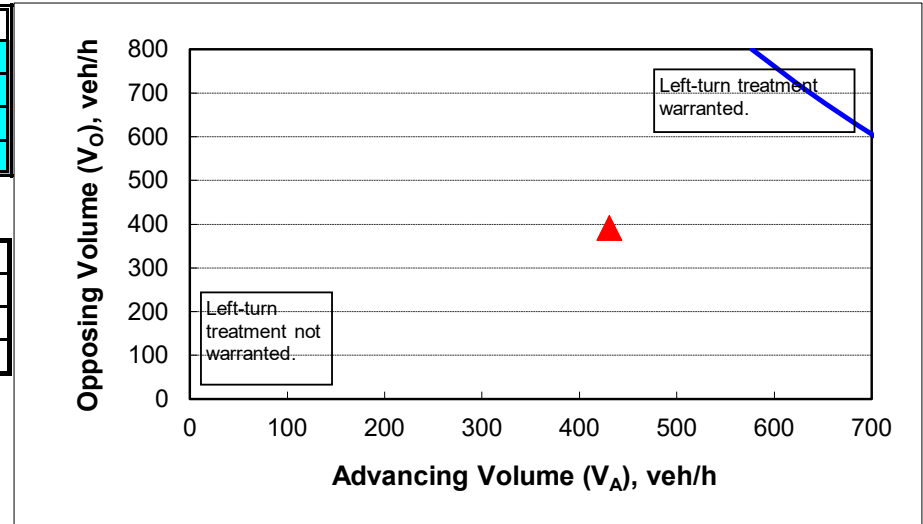
2-lane roadway (English)

INPUT

Variable	Value
85 <sup>th</sup> percentile speed, mph:	46
Percent of left-turns in advancing volume ( $V_A$ ), %:	5%
Advancing volume ( $V_A$ ), veh/h:	431
Opposing volume ( $V_O$ ), veh/h:	391

OUTPUT

Variable	Value
Limiting advancing volume ( $V_A$ ), veh/h:	563
<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



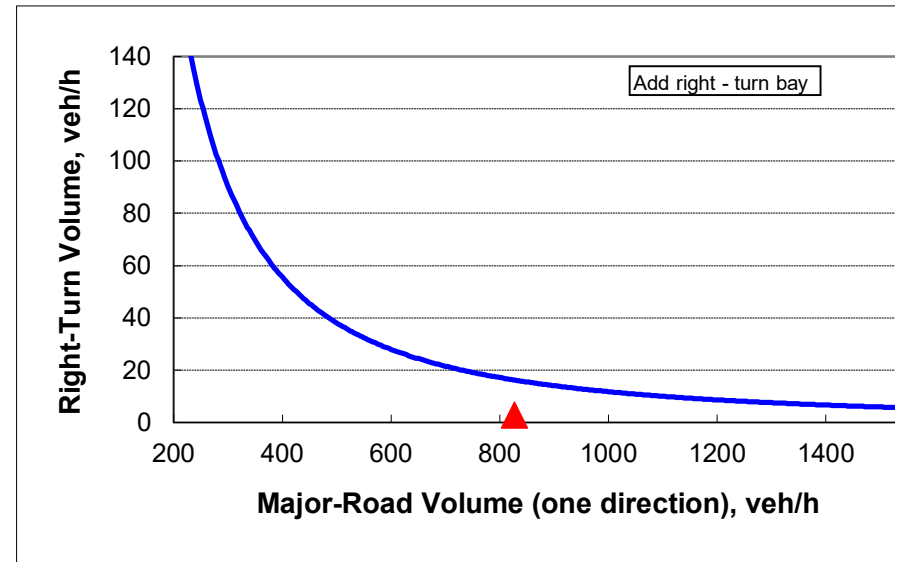
**Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.**

INPUT

Roadway geometry:	2-lane roadway
Variable	Value
Major-road speed, mph:	46
Major-road volume (one direction), veh/h:	828
Right-turn volume, veh/h:	3

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	16
<b>Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:</b>	
<b>Do NOT add right-turn bay.</b>	



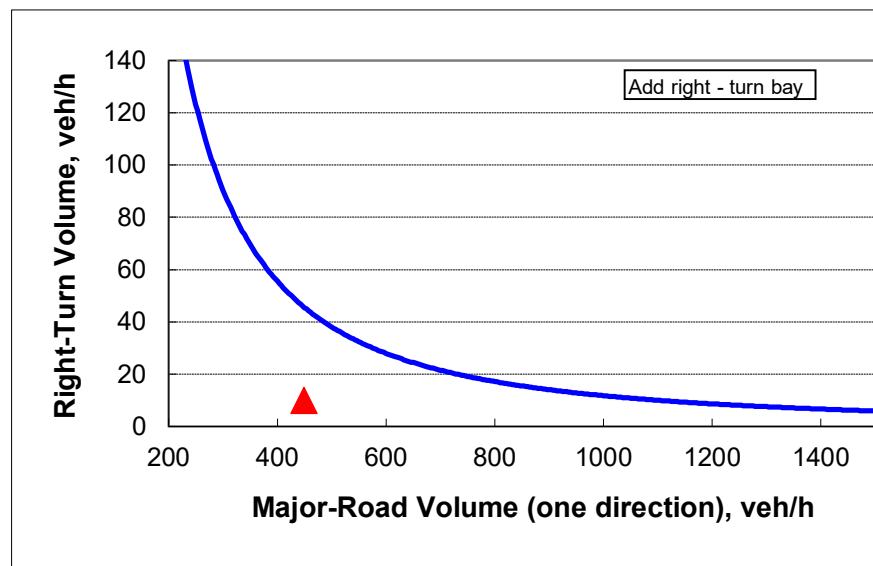
**Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.**

INPUT

Roadway geometry:	2-lane roadway
Variable	Value
Major-road speed, mph:	46
Major-road volume (one direction), veh/h:	450
Right-turn volume, veh/h:	10

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	46
<b>Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:</b>	
<b>Do NOT add right-turn bay.</b>	



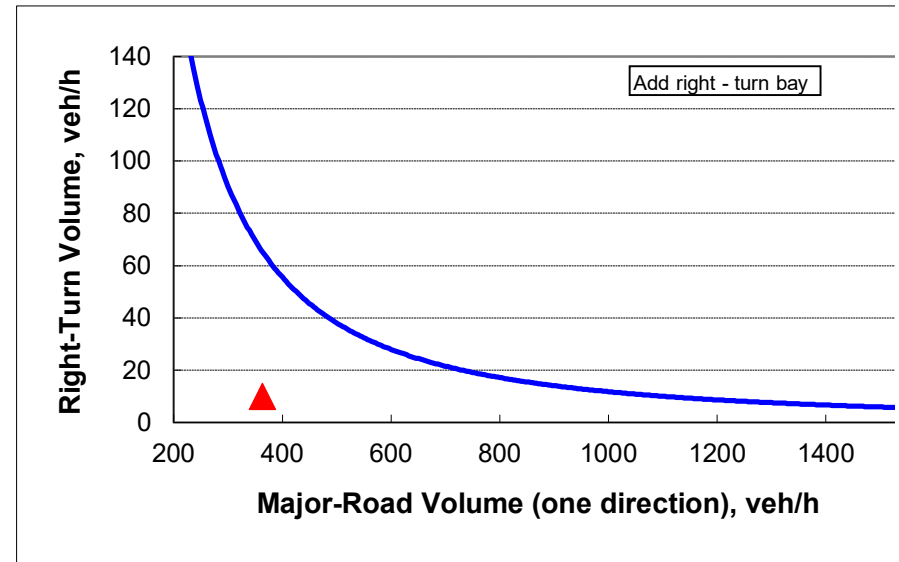
**Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.**

INPUT

Roadway geometry:	2-lane roadway
Variable	Value
Major-road speed, mph:	46
Major-road volume (one direction), veh/h:	364
Right-turn volume, veh/h:	10

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	65
<b>Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:</b>	
<b>Do NOT add right-turn bay.</b>	



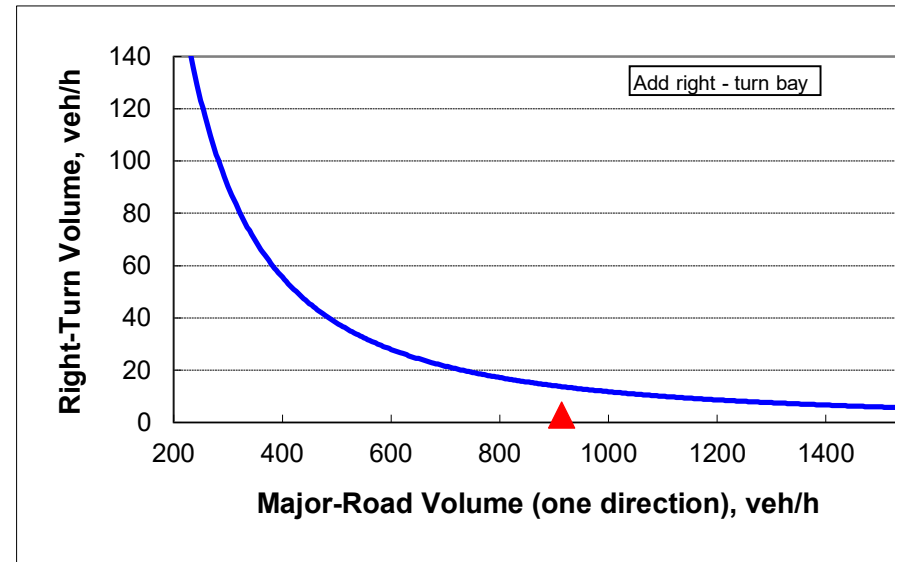
**Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.**

INPUT

Roadway geometry:	2-lane roadway
Variable	Value
Major-road speed, mph:	46
Major-road volume (one direction), veh/h:	914
Right-turn volume, veh/h:	3

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	14
<b>Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:</b>	
<b>Do NOT add right-turn bay.</b>	



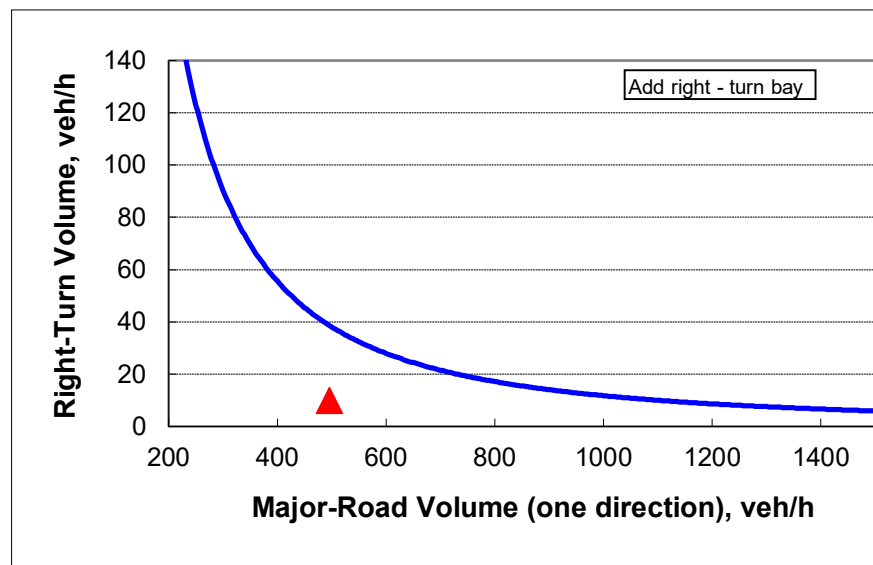
**Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.**

INPUT

Roadway geometry:	2-lane roadway
Variable	Value
Major-road speed, mph:	46
Major-road volume (one direction), veh/h:	496
Right-turn volume, veh/h:	10

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	39
<b>Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:</b>	
<b>Do NOT add right-turn bay.</b>	



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

INPUT

Roadway geometry:	2-lane roadway
Variable	Value
Major-road speed, mph:	46
Major-road volume (one direction), veh/h:	401
Right-turn volume, veh/h:	10

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	55
<b>Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:</b>	
<b>Do NOT add right-turn bay.</b>	

