



Traffic Impact Study

Affordable Housing Development on Clark Lane
Waterford, Connecticut

Prepared for:
Freehold Real Estate

Prepared by:
KWH Enterprise, LLC
March 2023 Revised



Traffic Impact Study Affordable Housing Development on Clark Lane Waterford, Connecticut

This study examines the traffic impact of a proposed affordable housing development in Waterford, Connecticut. Levels of Service (LOS) for traffic flows under 2022 existing and 2025 no-build and build traffic conditions were analyzed to identify any deficiencies in existing and future traffic operations at area intersections. For the purpose of this traffic study, 2025 was assumed to be the year during which the construction is completed and the dwelling units are occupied.

I. Summary

- The affordable housing development is estimated to generate 18 vehicular trips during the weekday morning peak hour of streets and 27 vehicular trips during the weekday afternoon peak hour of streets. These represent increases of two percent in traffic volumes on Clark Lane during the two peak hours.
- Peak-hour turning counts were collected at area intersections in November 2022. The counts were seasonally adjusted to reflect August traffic volumes when area schools resume classes.
- The traffic impact of the development will be limited. After the housing units are built and occupied, traffic leaving the northern driveway on Clark Lane will operate at the favorable LOS A, B, and C during the peak hours. The site traffic will increase intersection-level delays at the Clark Lane and Route 1 intersection by 0.1 second, 0.3 second, and 1.3 seconds during the three analyzed peak hours.
- Recent-year accident records for the segment of Clark Lane near the development were reviewed. No abnormal accident patterns were identified.
- At the intersection of Fog Plain Road, Clark Lane, and Chester Street, the traffic approaches controlled by two stop signs experience relatively long delays and queueing during the peak hours. We evaluated the need for a traffic signal control at this location. Using *MUTCD (Manual on Uniform Traffic Control Devices)* published by the Federal Highway Administration, we determined that a traffic signal is warranted and recommend that one be installed by the Town of Waterford. The delays and queueing and the need for a traffic signal at this intersection are existing conditions and are not a result of the proposed housing development.

II. Project Description

The development site is located on the east side of Clark Lane and north of the Clark Lane Middle School in Waterford, Connecticut. 47 affordable housing units are

proposed on two undeveloped parcels. There will be two driveways on Clark Lane: the southern driveway will be for entries only, and the northern driveway will allow both entries and exits. The posted speed limit on Clark Lane is 30 mph.

III. Existing Traffic Conditions

To evaluate the quality of traffic operation in the vicinity of the development, the following signalized and unsignalized intersections were analyzed for the study:

- The two future site driveway intersections on Clark Lane;
- Clark Lane, the park driveway, and the northern middle school driveway;
- Clark Lane, the park driveway, and the southern middle school driveway;
- Clark Lane and Route 1 (Boston Post Road).

Peak-hour traffic volumes were collected during weekday morning and afternoon peak hours on Thursday, November 3, 2022. The weekday peak hours for the traffic analysis were 7:00 am-8:00 am, 2:30 pm-3:30 pm for the afternoon peak hour of the adjacent middle school, and 4:00 pm-5:00 pm for the afternoon peak hour of streets. The November traffic volumes were seasonally adjusted to volumes for August when schools resume classes. The resulting 2022 volumes are shown in Figures 1, 2a, and 2b.

Capacity Analysis

To assess the quality of traffic flow, intersection capacity analysis was conducted for the existing, future no-build and future build traffic conditions. Capacity analysis provides an indication of how well roadway facilities serve the traffic demands placed upon them. *Synchro 10*, a software package that includes the evaluation criteria of the *2000 Highway Capacity Manual (HCM 2000)* and the *Highway Capacity Manual, Sixth Edition (HCM 6)*, was used to analyze the intersections.

Level of service (LOS) is the term used to describe the different operating conditions that occur on a given roadway segment or intersection under various traffic conditions. It is a qualitative measure of the effects of a number of factors including roadway geometry, speed, travel delay, freedom to maneuver, and safety. Six levels of service can be defined for each type of facility. Each level of service (LOS) is given a letter designation from A to F, with LOS A representing the best operating conditions and LOS F representing the worst.

LOS at intersection is measured in terms of average control delay. For signalized intersections and all-way stop-controlled intersections, the analysis considers the operation of all traffic entering the intersection, and an overall condition is reported in addition to individual movements. For two-way stop-controlled (TWSC) intersections where side street traffic has to stop for main street traffic, the analysis assumes that through traffic on the main street is not affected by traffic on side streets. Thus, LOS is calculated for the main street left-turn and side street approaches, and no overall intersection LOS is defined for TWSC intersections.

Table 1 that follows shows the capacity analysis results for the analyzed intersections under the 2022 existing traffic conditions. All intersection approaches operated at acceptable LOS D or better during the weekday morning peak hour. During the afternoon peak hour of the school, traffic exiting the southern driveway of the middle school and the opposite park driveway experienced delays. During both afternoon peak hours, the left-turn movement turning from eastbound Route 1 to Clark Lane experienced average delays of about one minute and LOS E.

The configuration of the intersection of Clark Lane, Fog Plain Road, and Chester Street, which is controlled by one stop sign on Clark Lane, one stop sign on Fog Plain Road, and no stop sign on Chester Street, is not covered by the analysis method of the *Highway Capacity Manual*. As a result, the Synchro software cannot generate delays and LOS for this intersection. Traffic on the two stopped approaches of the intersection was observed to experience relatively long delays and queuing during the peak hours. These delays and queuing are existing conditions and are not a result of the proposed affordable housing development.

24-hour traffic data collected for this project in October and December 2022 were used to evaluate the need for a traffic signal at this T intersection. A summary table for a signal warrant analysis using *MUTCD (Manual on Uniform Traffic Control Devices)* published by the Federal Highway Administration is included in the Appendices. Criteria for traffic signal warrant 1 using eight-hour volumes could not be met in the analysis. Criteria for warrant 2 (four-hour volumes) and warrant 3 (peak hour volumes) were satisfied. Based on this analysis, we recommend that the Town of Waterford install a traffic signal at this intersection. The need for a traffic signal is based on existing traffic volumes independent of the proposed housing development.

Table 1 Capacity Analyses for Existing Conditions

Intersection	2022 Existing Conditions					
	Weekday AM Peak Hour		Weekday PM Peak Hour of School		Weekday PM Peak Hour of Streets	
	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS
Clark Ln., Park Driveway (N), and Middle School Driveway (N) (Unsignalized)						
NB Clark Ln. Left Turn	8.2	A	9.0	A	8.8	A
NB Clark Ln. Through and Right Turn	0.0	A	0.0	A	0.0	A
EB Park Driveway (N)	18.0	C	13.0	B	18.2	C
SB Clark Ln. Left Turn	8.7	A	8.9	A	8.8	A
SB Clark Ln. Through and Right Turn	0.0	A	0.0	A	0.0	A
Clark Ln., Park Driveway (S), and Middle School Driveway (S) (Unsignalized)						
NB Clark Ln. Left Turn	8.2	A	9.5	A	8.9	A
NB Clark Ln. Through and Right Turn	0.0	A	0.0	A	0.0	A
EB Park Driveway (S)	17.9	C	35.0	E	14.1	B
WB Middle School Driveway (S)	33.6	D	221.8	F	25.5	D
SB Clark Ln. Left Turn	8.3	A	9.2	A	8.7	A
SB Clark Ln. Through and Right Turn	0.0	A	0.0	A	0.0	A
Commercial Driveway, Clark Ln., and Route 1 (Signalized)						
EB Route 1 Left Turn	9.9	A	59.3	E	60.6	E
EB Route 1 Through and Right Turn	8.8	A	11.7	B	12.4	B
WB Route 1 Left Turn	10.8	B	11.8	B	11.3	B
WB Route 1 Through and Right Turn	15.6	B	29.6	C	33.5	C
NB Commercial Driveway Left Turn and Through	23.4	C	23.3	C	25.8	C
NB Commercial Driveway Right Turn	23.4	C	22.2	C	22.7	C
SB Clark Ln. Left Turn and Through	38.7	D	52.6	D	45.4	D
SB Clark Ln. Right Turn	18.0	B	16.8	B	18.2	B
Intersection	15.4	B	29.6	C	30.4	C

EB Eastbound
WB Westbound
NB Northbound
SB Southbound
LOS Level of Service

IV. Future Traffic Conditions

For the purpose of this traffic impact study, it was assumed that the dwelling units will be built and occupied in 2025.

As a comparison for demonstrating the traffic impact of the project, a 2025 no-build scenario is included in the study. Figures 3, 4a, and 4b show the 2025 no-build traffic volumes, which were generated by using an annual background traffic growth rate of 0.8 percent for Waterford that was recommended by the CTDOT, or 2.4 percent over three years between 2022 and 2025.

Table 2 details the capacity analysis results for the 2025 no-build traffic conditions. Traffic exiting the southern driveway of the middle school will experience relatively long delays during the weekday morning peak hour and the weekday afternoon peak hour of the school. At the Clark Lane and Route 1 intersection, traffic turning from eastbound Route 1 to Clark Lane will continue to experience delays. During the weekday afternoon peak hour of the school, the left lane of the southbound Clark Lane approach of the Route 1 intersection will operate at LOS E.

Table 2 Capacity Analyses for No-Build Conditions

Intersection	2025 No-Build Conditions					
	Weekday AM Peak Hour		Weekday PM Peak Hour of School		Weekday PM Peak Hour of Streets	
	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS
Clark Ln., Park Driveway (N), and Middle School Driveway (N) (Unsignalized)						
NB Clark Ln. Left Turn	8.3	A	9.0	A	8.8	A
NB Clark Ln. Through and Right Turn	0.0	A	0.0	A	0.0	A
EB Park Driveway (N)	18.4	C	13.1	B	18.7	C
SB Clark Ln. Left Turn	8.8	A	9.0	A	8.9	A
SB Clark Ln. Through and Right Turn	0.0	A	0.0	A	0.0	A
Clark Ln., Park Driveway (S), and Middle School Driveway (S) (Unsignalized)						
NB Clark Ln. Left Turn	8.2	A	9.6	A	8.9	A
NB Clark Ln. Through and Right Turn	0.0	A	0.0	A	0.0	A
EB Park Driveway (S)	18.3	C	37.1	E	14.3	B
WB Middle School Driveway (S)	35.6	E	252.5	F	26.3	D
SB Clark Ln. Left Turn	8.3	A	9.2	A	8.8	A
SB Clark Ln. Through and Right Turn	0.0	A	0.0	A	0.0	A
Commercial Driveway, Clark Ln., and Route 1 (Signalized)						
EB Route 1 Left Turn	10.8	B	67.5	E	86.8	F
EB Route 1 Through and Right Turn	8.9	A	11.9	B	12.6	B
WB Route 1 Left Turn	10.9	B	11.8	B	11.3	B
WB Route 1 Through and Right Turn	16.0	B	31.3	C	36.5	D
NB Commercial Driveway Left Turn and Through	23.4	C	23.3	C	25.7	C
NB Commercial Driveway Right Turn	23.3	C	22.2	C	22.6	C
SB Clark Ln. Left Turn and Through	39.6	D	56.2	E	47.4	D
SB Clark Ln. Right Turn	18.0	B	16.9	B	18.5	B
Intersection	15.8	B	31.8	C	35.5	D

EB Eastbound
WB Westbound
NB Northbound
SB Southbound
LOS Level of Service

Trip Generation

The peak-hour vehicular trips generated by the affordable housing development (Table 3) were based on data from ITE *Trip Generation Manual, 11th Edition*. On weekdays, the development will generate 18 and 27 trips during the respective morning and afternoon peak hours of streets. The manual does not contain trip information for the weekday afternoon peak hour of the middle school; we assumed that the trips will be half of those for the weekday afternoon peak hour of adjacent streets. During the weekday afternoon of streets when the development will generate the most traffic of 27 trips, these site trips will represent only two percent of the existing traffic on Clark Lane.

Table 3 Trip Generation for Affordable Housing Development (vph)

Mobile Home Park(LU 240) (47 Units), 11th Edition of Trip Generation Manual			
	Entry	Exit	Entry & Exit
Weekday AM peak hour of adjacent streets	4	14	18
Weekday PM peak hour of school*	9	5	14
Weekday PM peak hour of adjacent streets	17	10	27

* Assumed that the trips for the weekday afternoon peak hour of the school are half of those for the weekday afternoon peak hour of adjacent streets.

vph Vehicles per hour

Table 4 depicts the distribution of the site-generated trips along area routes. The distribution takes into account the relative traffic volumes of area roadways and the development patterns in this part of Waterford.

Table 4 Trip Distribution

To / From Route	Entry and Exit
West: Fog Plain Road	5%
West: Route 1	30%
East: Chester Street	50%
East: Route 1	15%
Total	100%

Traffic volumes for the 2025 build conditions, which combine no-build volumes and site trips, are presented in Figures 7, 8a, and 8b.

Capacity Analysis

Table 5 shows the capacity analysis results for the 2025 build traffic conditions. Because of the limited number of peak-hour trips generated by the development, the incremental changes in average delays at intersections will be negligible. For example, at the signalized intersection of Clark Lane and Route 1, the development will increase the intersection-level delay by 0.1 second during the weekday morning peak hour, by 0.3 second during the weekday afternoon peak hour of the school, and by 1.3 seconds during the weekday afternoon peak hour of streets; the development will not change the LOS of the traffic approaches of the intersection of Route 1 and Clark Lane.

Table 5 Capacity Analyses for Build Conditions

Intersection	2025 Build Conditions					
	Weekday AM Peak Hour		Weekday PM Peak Hour of School		Weekday PM Peak Hour of Streets	
	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS
Clark Ln., Park Driveway (N), and Middle School Driveway (N) (Unsignalized)						
NB Clark Ln. Left Turn	8.3	A	9.0	A	8.8	A
NB Clark Ln. Through and Right Turn	0.0	A	0.0	A	0.0	A
EB Park Driveway (N)	18.6	C	13.2	B	18.9	C
SB Clark Ln. Left Turn	8.8	A	9.0	A	8.9	A
SB Clark Ln. Through and Right Turn	0.0	A	0.0	A	0.0	A
Clark Ln., Park Driveway (S), and Middle School Driveway (S) (Unsignalized)						
NB Clark Ln. Left Turn	8.2	A	9.6	A	8.9	A
NB Clark Ln. Through and Right Turn	0.0	A	0.0	A	0.0	A
EB Park Driveway (S)	18.4	C	37.4	E	14.4	B
WB Middle School Driveway (S)	36.3	E	262.1	F	27.0	D
SB Clark Ln. Left Turn	8.3	A	9.3	A	8.8	A
SB Clark Ln. Through and Right Turn	0.0	A	0.0	A	0.0	A
Clark Ln. and Site Driveway (N) (Unsignalized)						
WB Site Driveway (N)	15.1	C	22.9	C	20.2	C
SB Clark Ln. Left Turn	8.5	A	8.9	A	8.8	A
SB Clark Ln. Through	0.0	A	0.0	A	0.0	A
Commercial Driveway, Clark Ln., and Route 1 (Signalized)						
EB Route 1 Left Turn	10.8	B	70.9	E	94.3	F
EB Route 1 Through and Right Turn	8.9	A	11.9	B	12.7	B
WB Route 1 Left Turn	10.9	B	11.8	B	11.3	B
WB Route 1 Through and Right Turn	16.0	B	31.4	C	36.9	D
NB Commercial Driveway Left Turn and Through	23.4	C	23.2	C	25.6	C
NB Commercial Driveway Right Turn	23.3	C	22.1	C	22.5	C
SB Clark Ln. Left Turn and Through	40.2	D	55.6	E	47.7	D
SB Clark Ln. Right Turn	18.1	B	17.0	B	18.6	B
Intersection	15.9	B	32.2	C	36.8	D

EB Eastbound
 WB Westbound
 NB Northbound
 SB Southbound
 LOS Level of Service

At the northern driveway of the development, traffic will operate at favorable LOS C or better during all three peak hours. The traffic impact of the development will be limited because the housing development will generate few peak-hour trips and these few trips will result in negligible changes to traffic operations at area intersections.

V. Traffic Accident Record Summary

Traffic accident records for Clark Lane between the Fog Plain Road and Norman Street intersections during 2017-2020 are summarized in Table 6.

A total of 12 accidents were recorded for the segment of Clark Lane. Most were at intersections or near the middle school driveways. No accidents occurred at the locations of the two proposed driveways for the housing development. Four were angle accidents, and four were front-to-rear accidents.

Table 6 Accident Record Summary

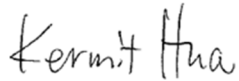
Location	Clark Lane, between Fog Plain Road and Norman Street
Year	
2017	4
2018	4
2019	3
2020	1
Total	12
Accident Severity	
Fatality	0
Injury (No Fatality)	4
Property Damage Only	8
Total	12
Type of Collision	
Sideswipe-Same Direction	2
Angle	4
Front to Rear	4
Fixed Object	1
Other	1
Total	12
Weather Condition	
Clear	11
Rain	1
Total	12
Road Surface Condition	
Dry	10
Wet	2
Total	12
Light Condition	
Daylight	11
Dark-Not Lighted	1
Total	12

Source: Connecticut Crash Data Repository

Based on the numbers and locations of the accidents over the four-year period and the accident categories in the table, no abnormal accident patterns were identified from these records. Because this housing development will generate a limited number of site trips during the weekday peak hours, it is not expected to adversely affect the safety conditions of the adjacent roadways.

VI. Conclusions

Area traffic operation was analyzed for a 47-unit affordable housing development under 2022 existing and 2025 no-build and build traffic conditions. The development will generate a limited number of site trips during the busiest weekday peak hours; the increases in delays at area intersections as a result of the development will be negligible. Traffic exiting the development will operate at favorable LOS A, B, or C at the northern site driveway on Clark Lane. The affordable housing development is expected to produce limited traffic impact on area roadways.



Kermit Hua, PE, PTOE
Principal
KWH Enterprise, LLC
(203) 606-3525
kermit.hua@kwhenterprise.com

CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF POLICY & PLANNING - ROADWAY INFORMATION SYSTEMS
TRAFFIC DATA COLLECTION & VERIFICATION SECTION

FACTORS FOR EXPANDING 24-HOUR COUNTS TO
ANNUAL AVERAGE DAILY TRAFFIC VOLUMES
(BASED ON 2018 CONTINUOUS COUNT STATION DATA)

GROUP - 1 ** INTERSTATE **

STATION(S): 7, 12, 24, 30, 31, 32, 53, 54

	AVG.	WEEKDAY	FRIDAY	SATURDAY	SUNDAY
JANUARY		1.08	1.03	1.21	1.41
FEBRUARY		1.04	0.96	1.13	1.45
MARCH		1.05	0.93	1.05	1.21
APRIL		0.99	0.91	1.03	1.17
MAY		0.94	0.83	0.98	1.10
JUNE		0.95	0.90	0.99	1.08
JULY		0.95	0.91	0.97	1.08
AUGUST		0.94	0.86	0.99	1.06
SEPTEMBER		0.99	0.89	0.99	1.08
OCTOBER		0.98	0.90	1.00	1.12
NOVEMBER		0.98	0.98	1.03	1.13
DECEMBER		1.00	0.96	1.04	1.22

GROUP - 2 ** RURAL **

STATION(S): 4, 10, 16, 20, 50, 51

	AVG.	WEEKDAY	FRIDAY	SATURDAY	SUNDAY
JANUARY		1.12	1.08	1.17	1.48
FEBRUARY		1.12	1.05	1.16	1.55
MARCH		1.08	1.04	1.06	1.32
APRIL		1.05	0.95	0.94	1.29
MAY		0.95	0.89	0.95	1.04
JUNE		0.91	0.80	0.87	0.95
JULY		0.93	0.84	0.87	0.98
AUGUST		0.89	0.83	0.90	0.93
SEPTEMBER		0.97	0.88	0.91	1.02
OCTOBER		0.98	0.88	0.97	1.08
NOVEMBER		1.00	1.02	1.09	1.21
DECEMBER		1.08	1.09	1.11	1.29

GROUP - 3 ** INTERSTATE **

STATION(S): 27 (I-84 FROM ROUTE 195 TO MASS. STATE LINE)

	AVG.	WEEKDAY	FRIDAY	SATURDAY	SUNDAY
JANUARY		1.02	1.10	1.25	0.99
FEBRUARY		0.86	0.81	1.02	1.22
MARCH		1.46	0.91	0.94	0.93
APRIL		1.22	0.96	1.00	1.00
MAY		1.07	0.73	0.99	0.90
JUNE		1.04	0.84	0.96	0.71
JULY		0.98	0.84	0.80	0.74
AUGUST		0.81	0.75	0.89	0.79
SEPTEMBER		1.11	1.09	1.13	0.81
OCTOBER		1.04	1.06	1.30	0.99
NOVEMBER		1.26	1.24	1.15	0.64
DECEMBER		1.14	0.33	0.43	0.79

CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF POLICY & PLANNING - ROADWAY INFORMATION SYSTEMS
TRAFFIC MONITORING & DATA ANALYSIS SECTION

FACTORS FOR EXPANDING 24-HOUR COUNTS TO
ANNUAL AVERAGE DAILY TRAFFIC VOLUMES
(BASED ON 2018 CONTINUOUS COUNT STATION DATA)

GROUP - 4 ** URBAN **

STATION(S): 8, 9, 11, 15, 17, 22, 23, 28, 47, 48, 52

	AVG.	WEEKDAY	FRIDAY	SATURDAY	SUNDAY
JANUARY		1.03	1.00	1.18	1.46
FEBRUARY		1.03	0.95	1.14	1.49
MARCH		0.97	0.94	1.07	1.30
APRIL		0.98	0.90	1.03	1.26
MAY		0.92	0.83	1.01	1.21
JUNE		0.91	0.85	1.01	1.15
JULY		0.95	0.89	1.06	1.22
AUGUST		0.95	0.89	1.09	1.23
SEPTEMBER		0.96	0.88	1.03	1.20
OCTOBER		0.95	0.86	1.05	1.16
NOVEMBER		0.97	0.97	1.08	1.27
DECEMBER		0.99	0.96	1.06	1.24

GROUP - 5 ** NORTHWEST RECREATIONAL **

STATION(S): 1 (Station 18 not available on 2018)

	AVG.	WEEKDAY	FRIDAY	SATURDAY	SUNDAY
JANUARY		1.29	1.18	1.05	1.21
FEBRUARY		1.24	1.10	1.02	1.34
MARCH		1.28	1.06	1.14	1.24
APRIL		1.04	0.88	0.96	0.85
MAY		1.00	0.83	0.78	0.80
JUNE		0.96	0.80	0.79	0.77
JULY		0.91	0.80	0.71	0.61
AUGUST		0.94	0.75	0.76	0.71
SEPTEMBER		0.99	0.85	0.69	0.73
OCTOBER		0.95	0.71	0.69	0.68
NOVEMBER		1.15	1.05	1.08	1.06
DECEMBER		1.13	1.11	1.09	1.25

GROUP - 6 ** SOUTHEAST RECREATIONAL **

STATION(S): 5, 33, 44, 46

	AVG.	WEEKDAY	FRIDAY	SATURDAY	SUNDAY
JANUARY		1.24	1.08	1.05	1.22
FEBRUARY		1.17	1.00	0.98	1.21
MARCH		1.19	0.98	0.93	1.06
APRIL		1.13	0.91	0.86	1.00
MAY		1.04	0.85	0.84	0.92
JUNE		1.00	0.80	0.81	0.88
JULY		0.91	0.77	0.75	0.79
AUGUST		0.92	0.75	0.77	0.80
SEPTEMBER		1.07	0.89	0.84	0.92
OCTOBER		1.10	0.89	0.93	0.98
NOVEMBER		1.17	0.97	0.93	1.04
DECEMBER		1.16	1.00	0.97	1.15

Land Use: 240

Mobile Home Park

Description

A mobile home park generally consists of manufactured homes that are sited and installed on permanent foundations. The mobile home park typically includes community facilities such as a recreation room, swimming pool, and laundry facilities.

Additional Data

The sites were surveyed in the 1980s, the 1990s, and the 2000s in Delaware, Indiana, Oregon, Virginia, and West Virginia.

Source Numbers

155, 169, 252, 936, 1066

Mobile Home Park (240)

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: 9

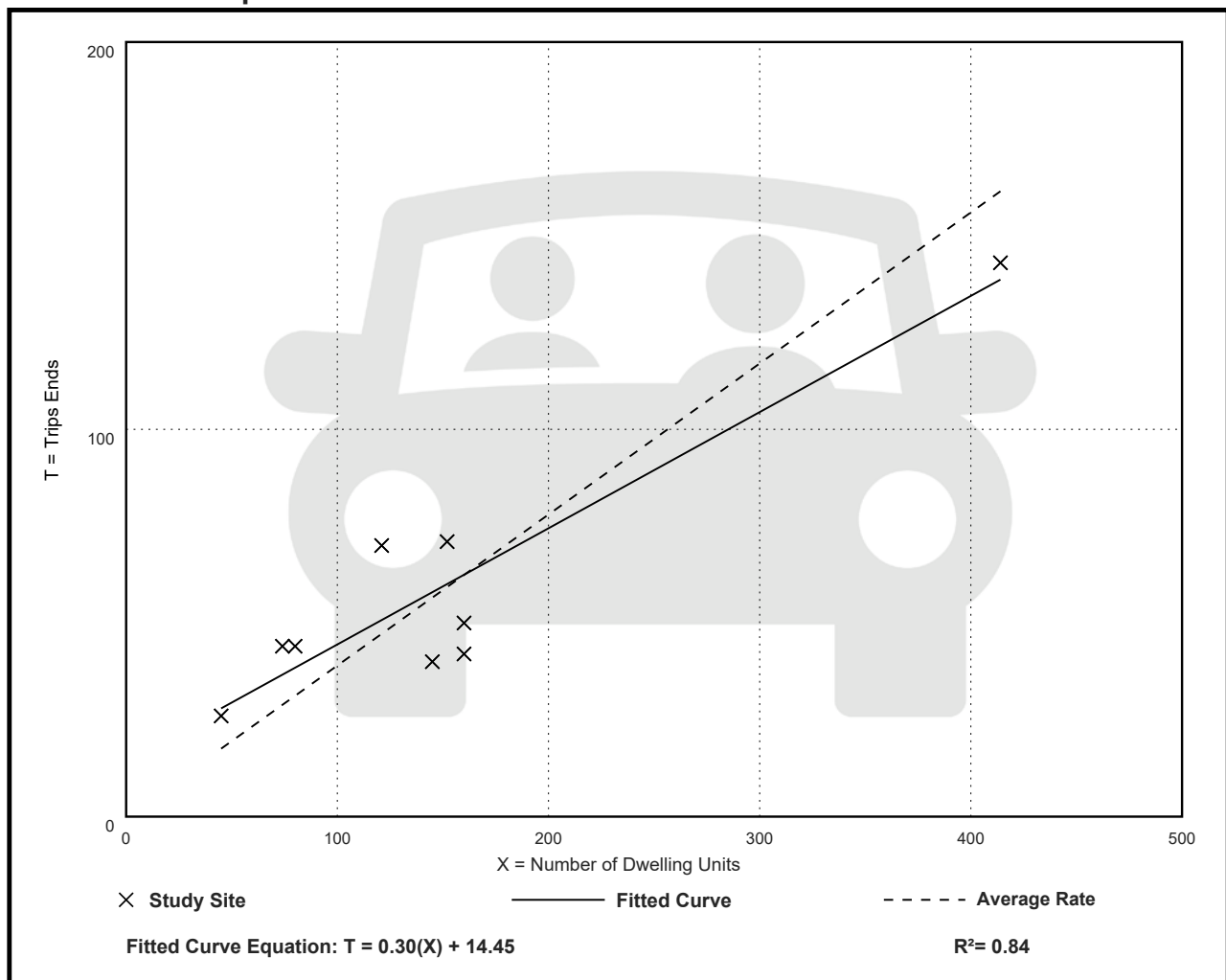
Avg. Num. of Dwelling Units: 150

Directional Distribution: 21% entering, 79% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.39	0.26 - 0.59	0.12

Data Plot and Equation



Mobile Home Park (240)

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: 9

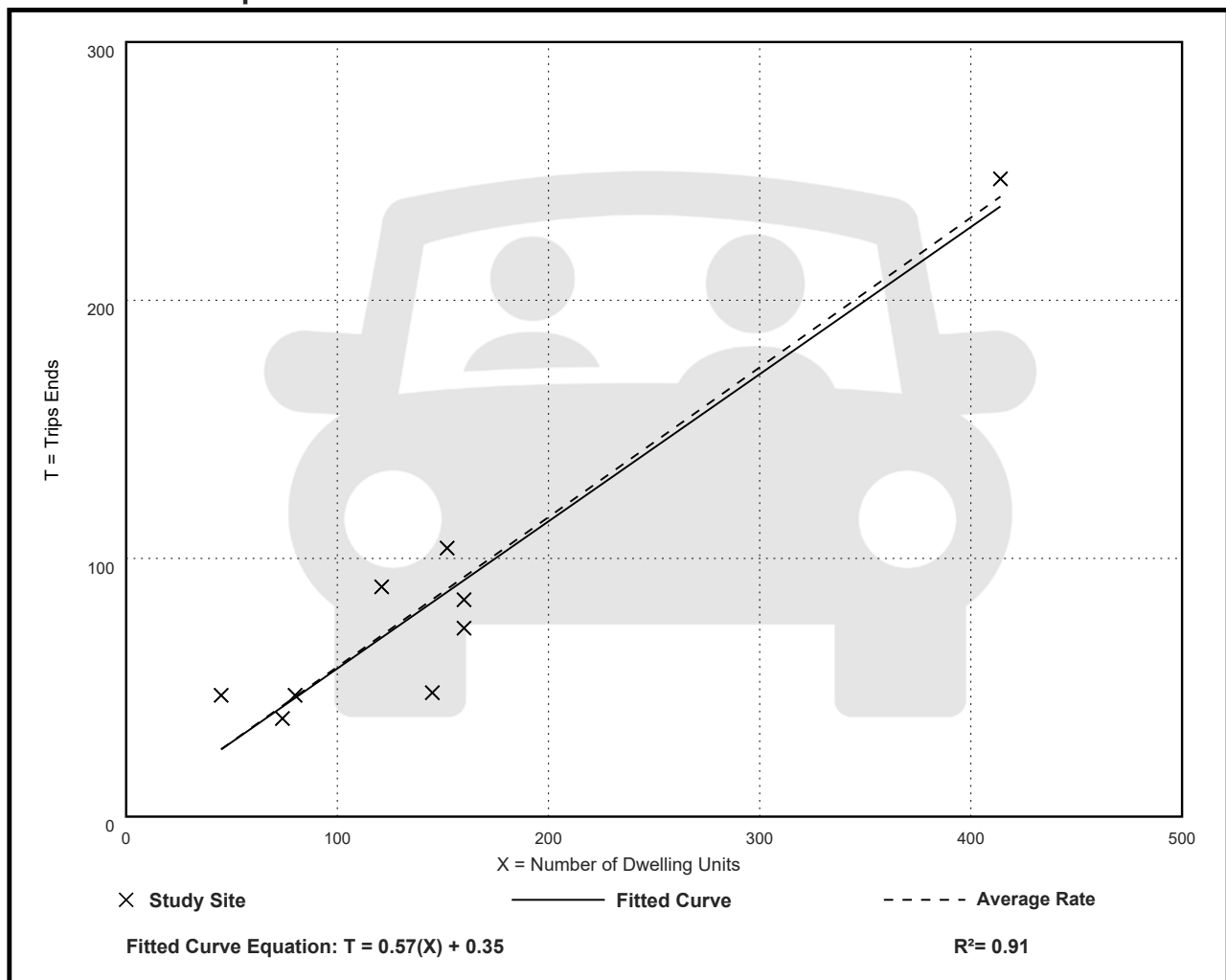
Avg. Num. of Dwelling Units: 150

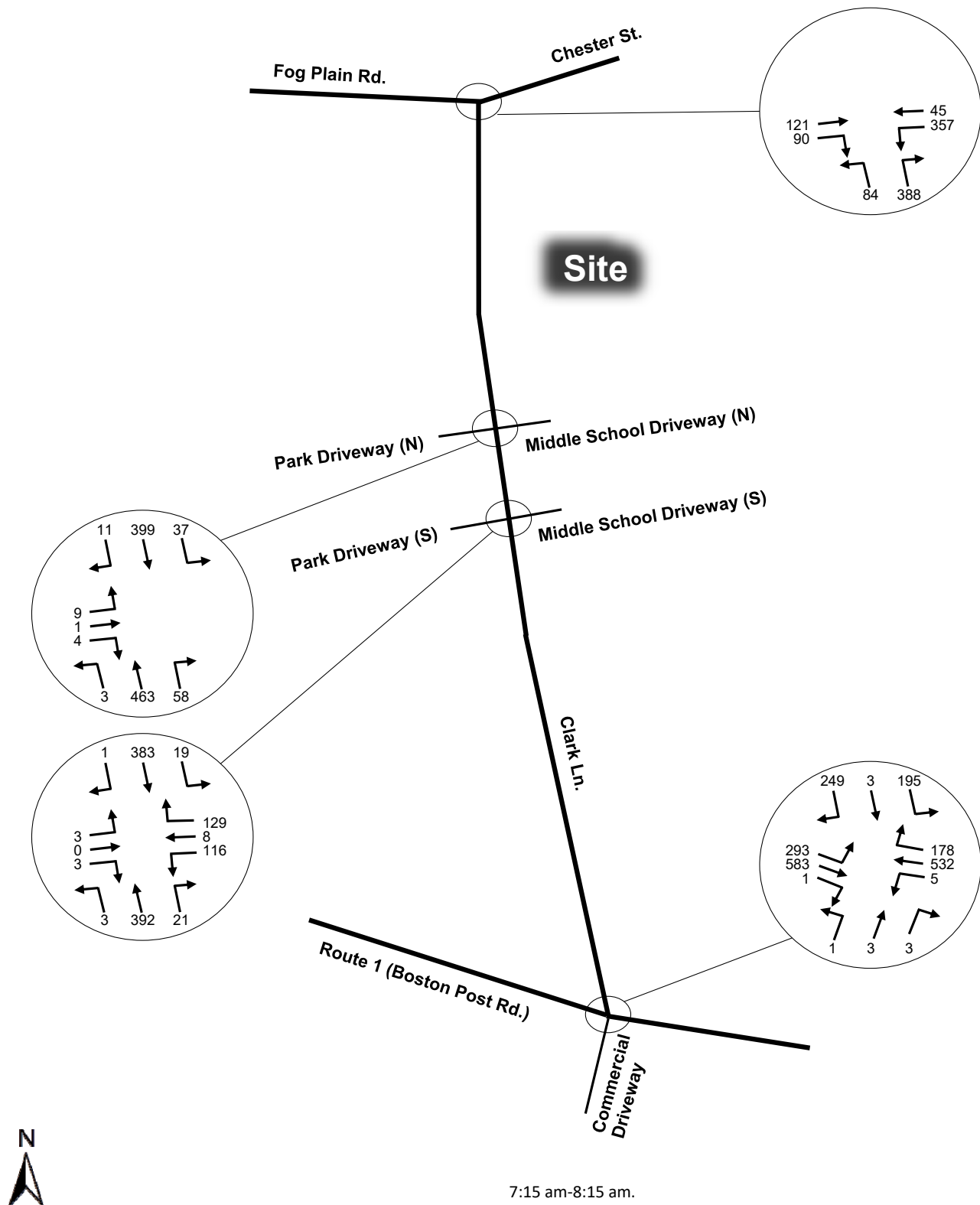
Directional Distribution: 62% entering, 38% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.58	0.33 - 1.04	0.15

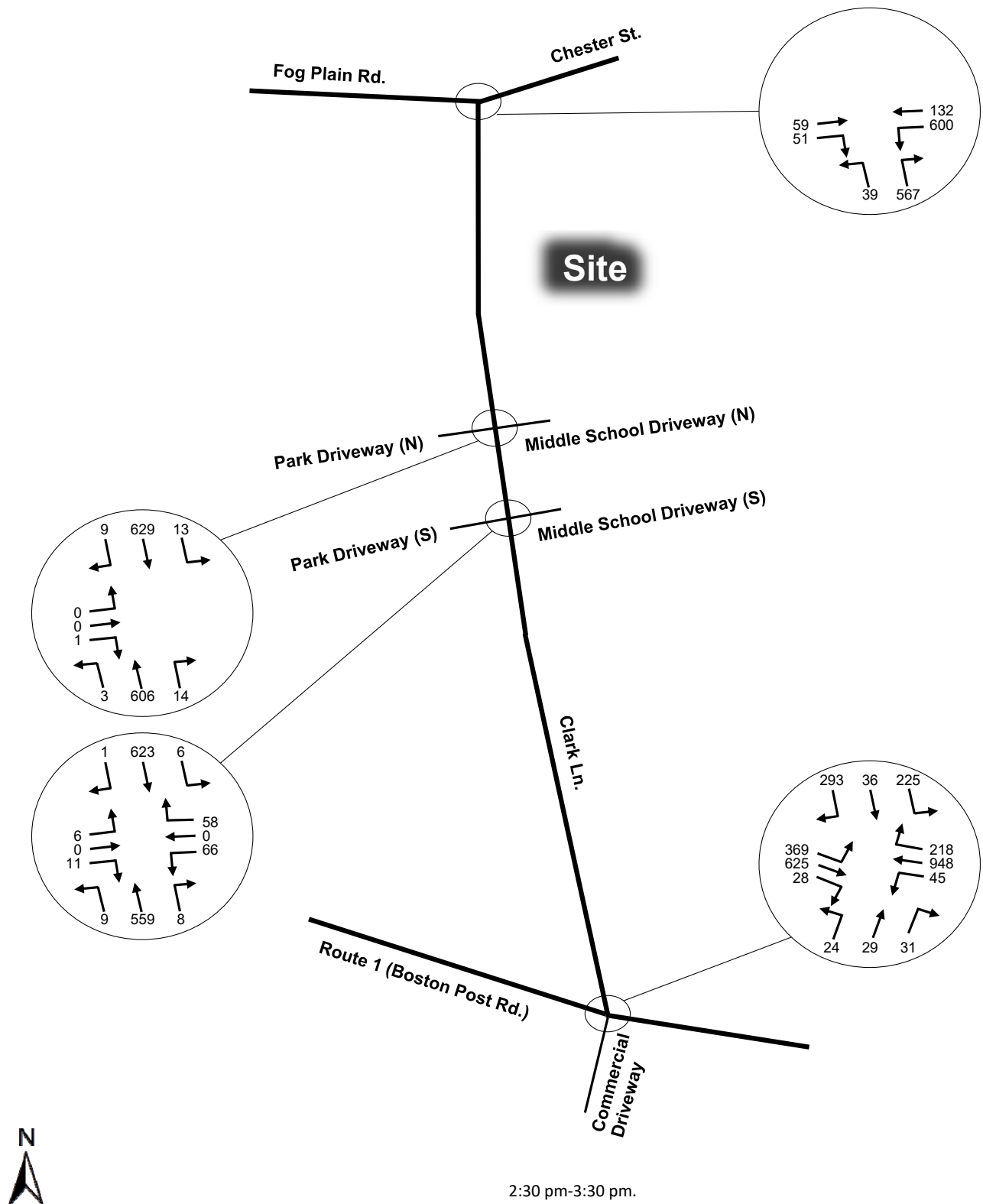
Data Plot and Equation





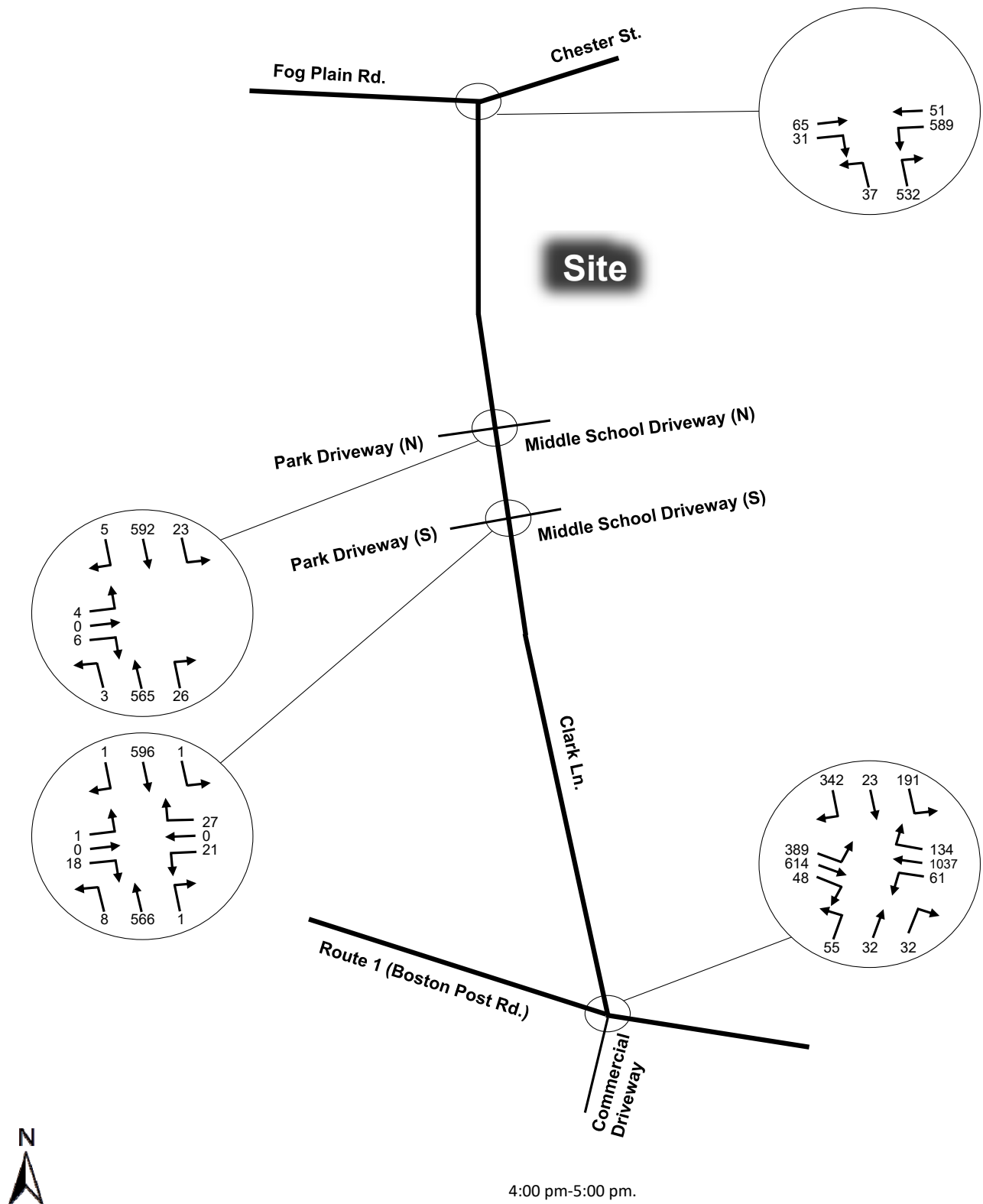
KWH

Figure 1 Year 2022 Existing Traffic Volumes Weekday Morning Peak Hour of Adjacent Streets



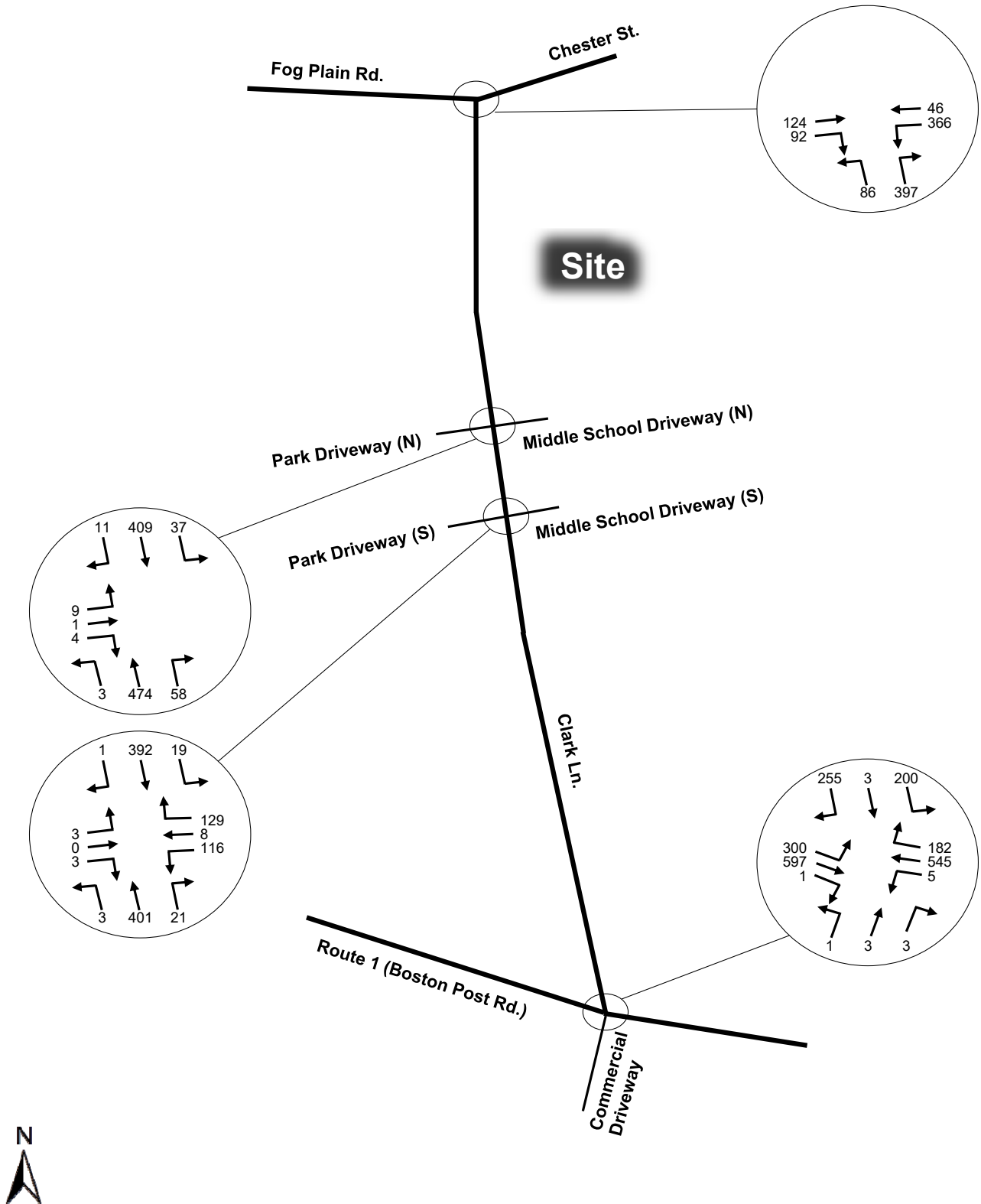
KWH

**Figure 2a Year 2022 Existing Traffic Volumes
Weekday Afternoon Peak Hour of School**



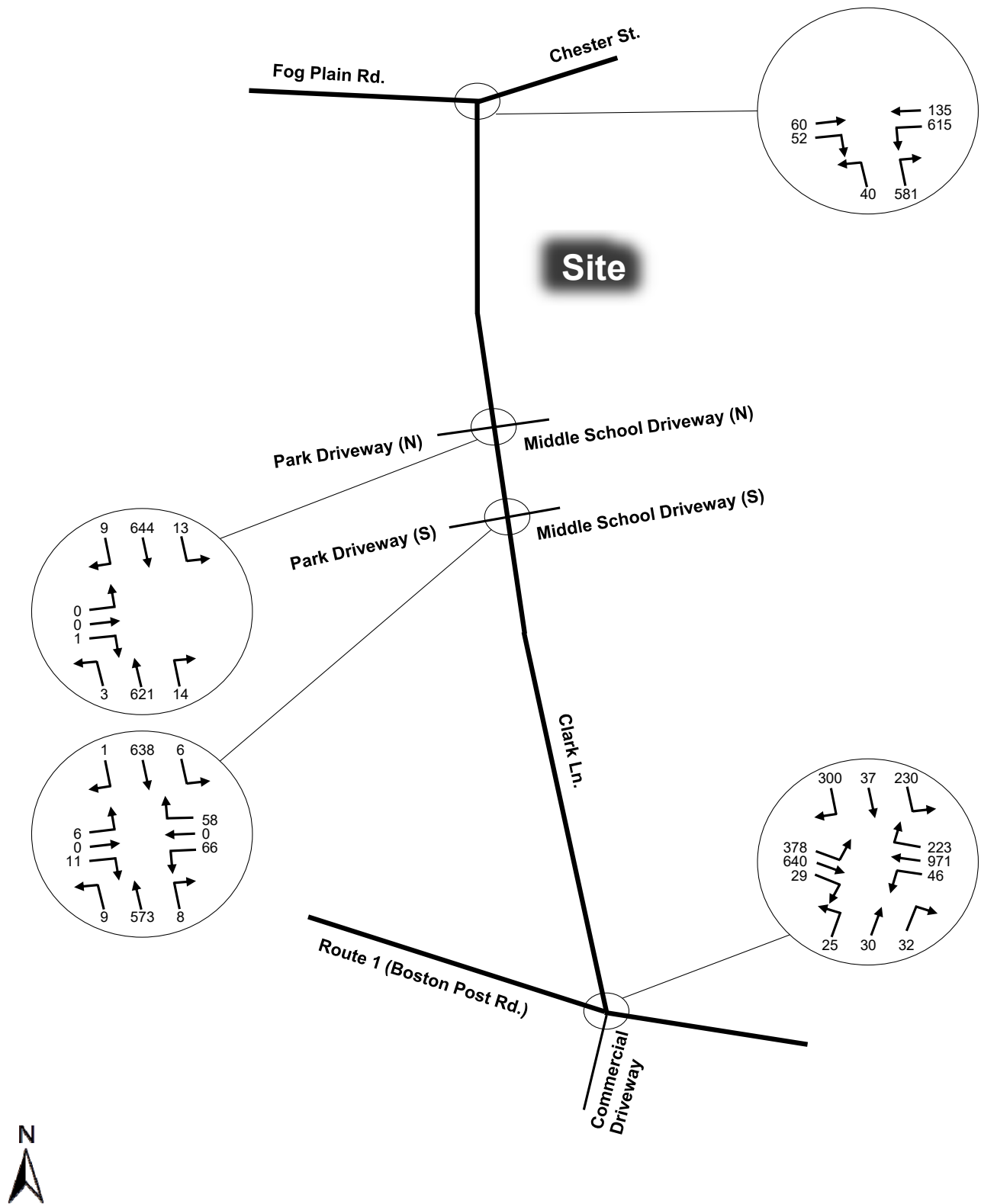
KWH

**Figure 2b Year 2022 Existing Traffic Volumes
Weekday Afternoon Peak Hour of Adjacent Streets**



KWH

**Figure 3 Year 2025 No-Build Traffic Volumes
Weekday Morning Peak Hour of Adjacent Streets**



KWH

**Figure 4a Year 2025 No-Build Traffic Volumes
Weekday Afternoon Peak Hour of School**

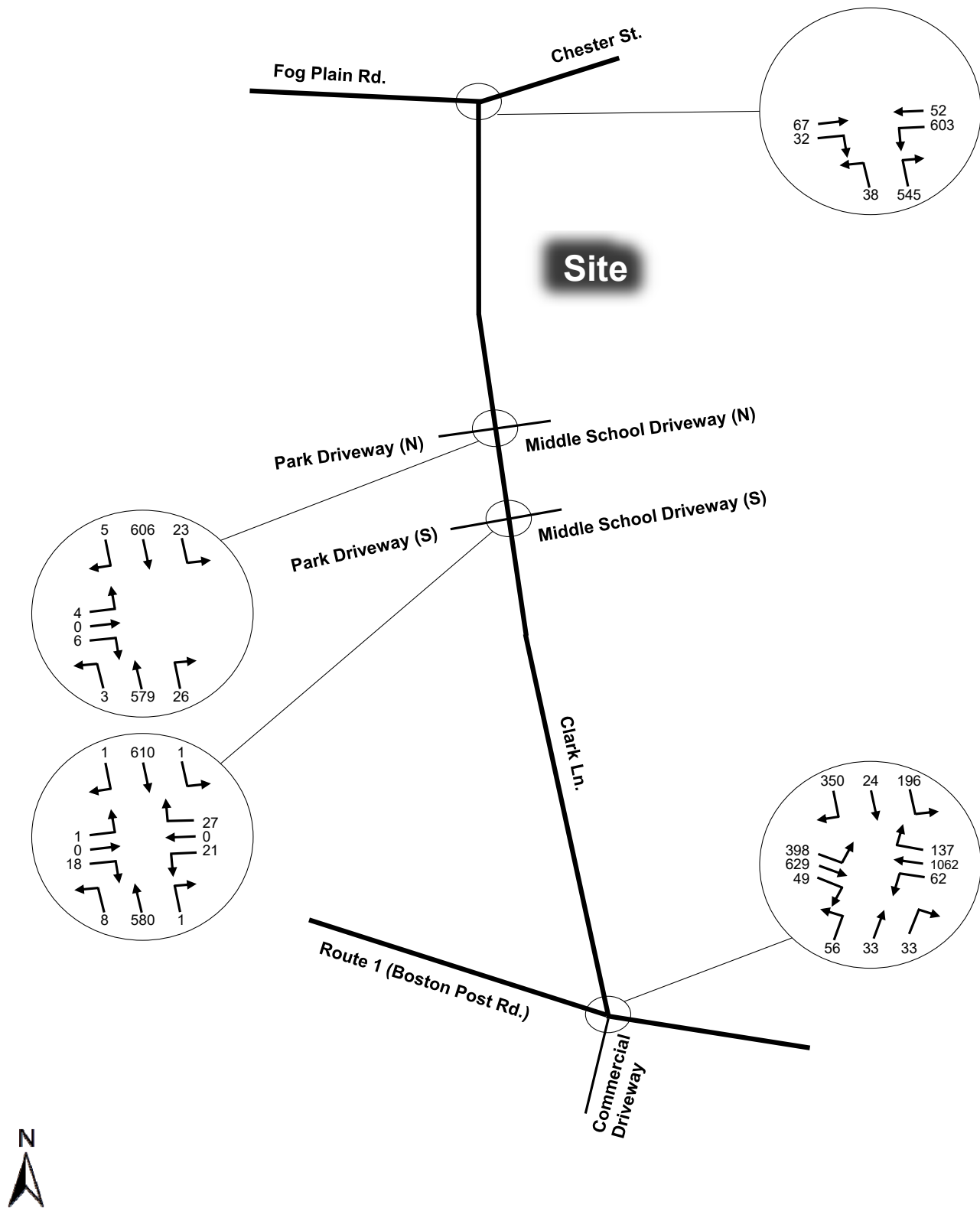


Figure 4b Year 2025 No-Build Traffic Volumes Weekday Afternoon Peak Hour of Adjacent Streets

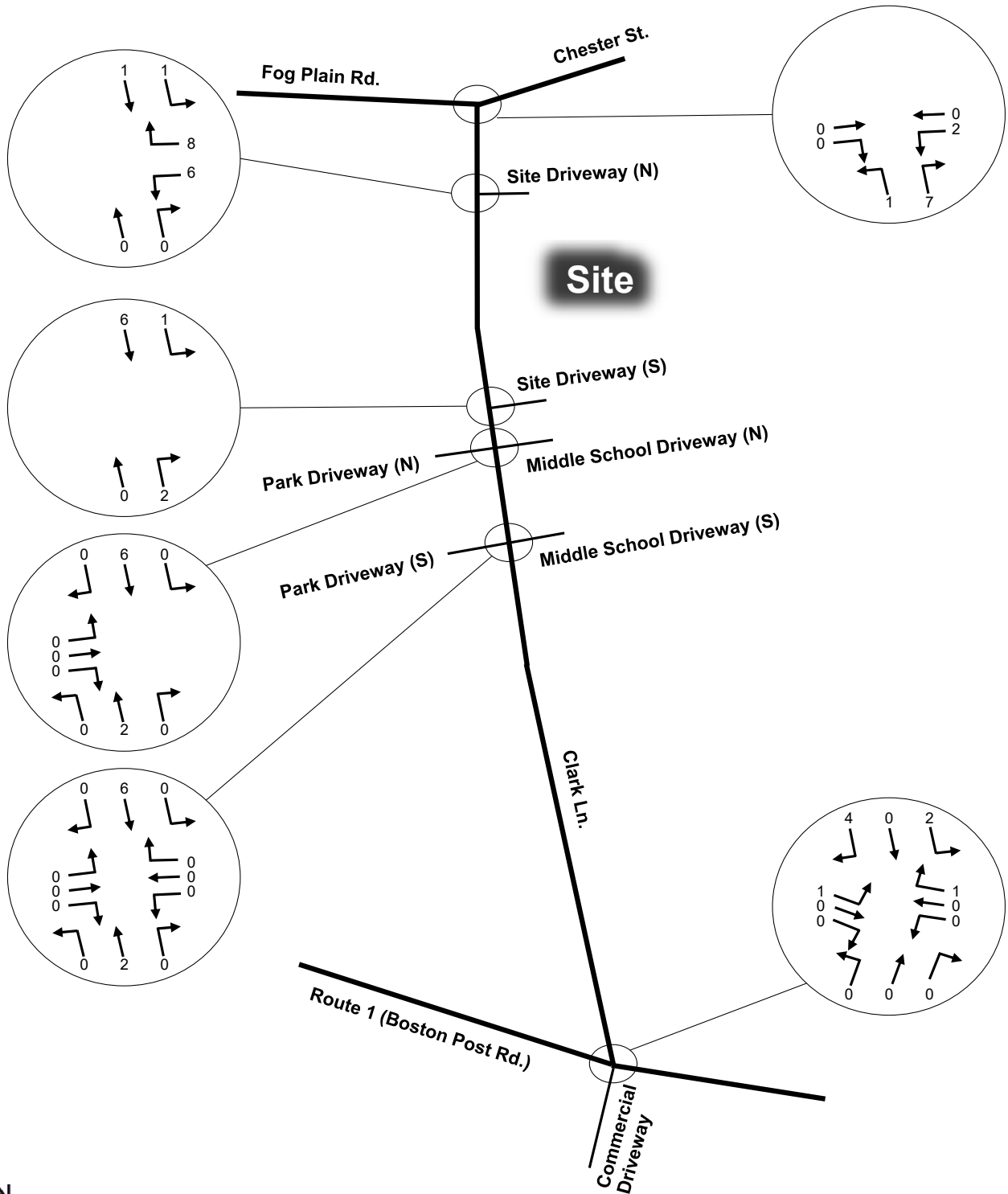
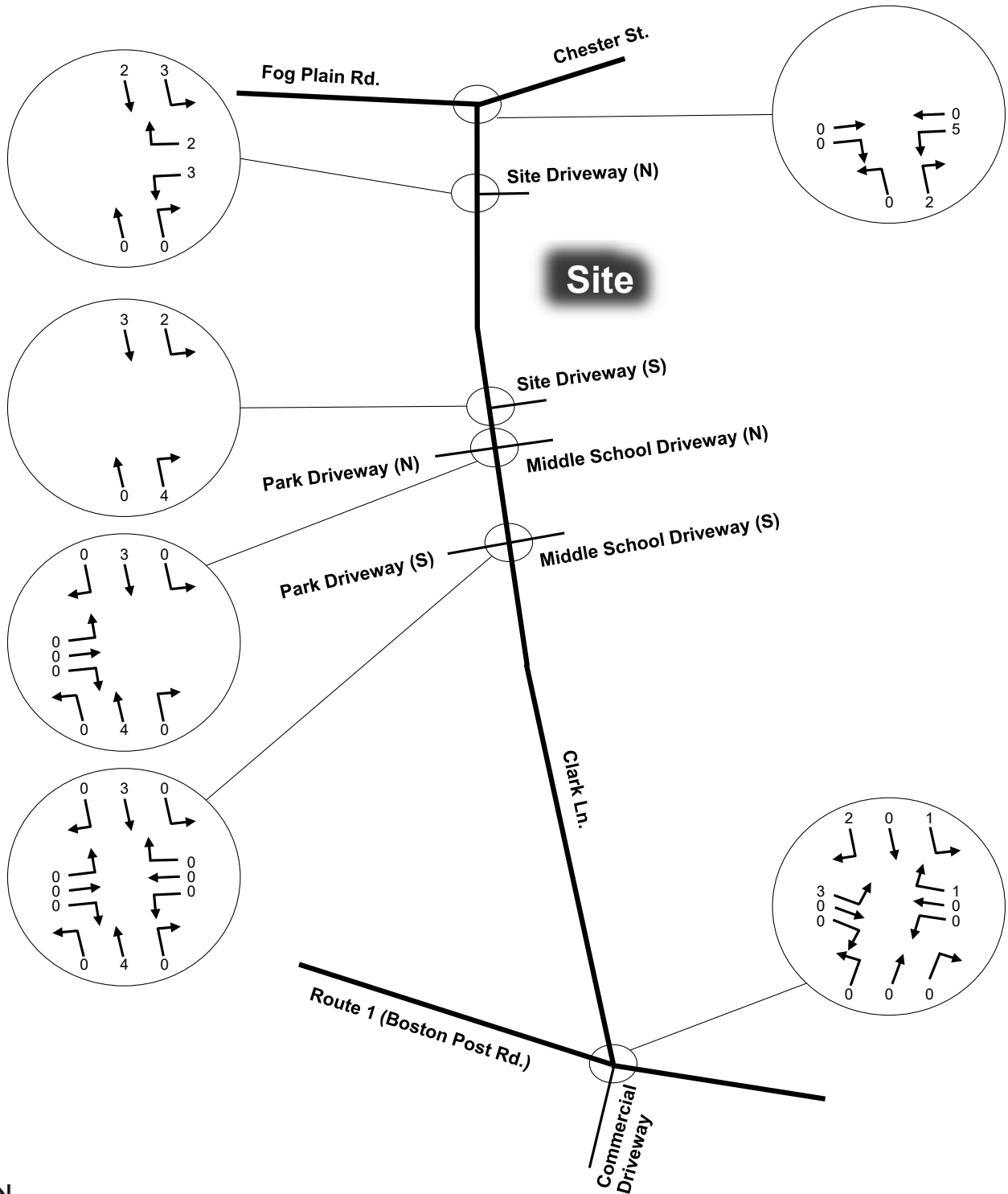


Figure 5 Trip Generation
Weekday Morning Peak Hour of Adjacent Streets



Assumed that the trips for the weekday afternoon peak hour of school are half of those for the weekday afternoon peak hour of adjacent streets.



Figure 6a Trip Generation
Weekday Afternoon Peak Hour of School

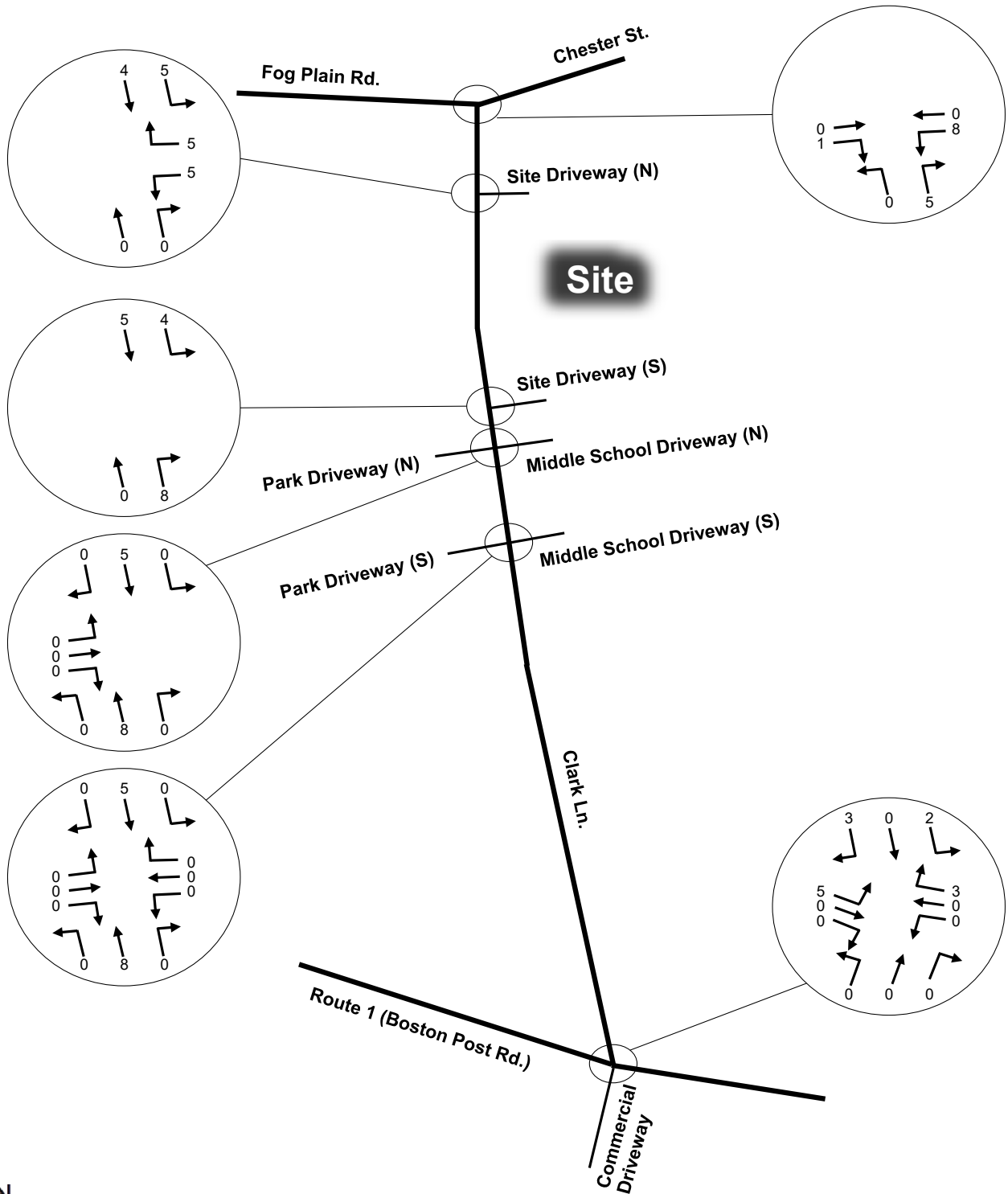
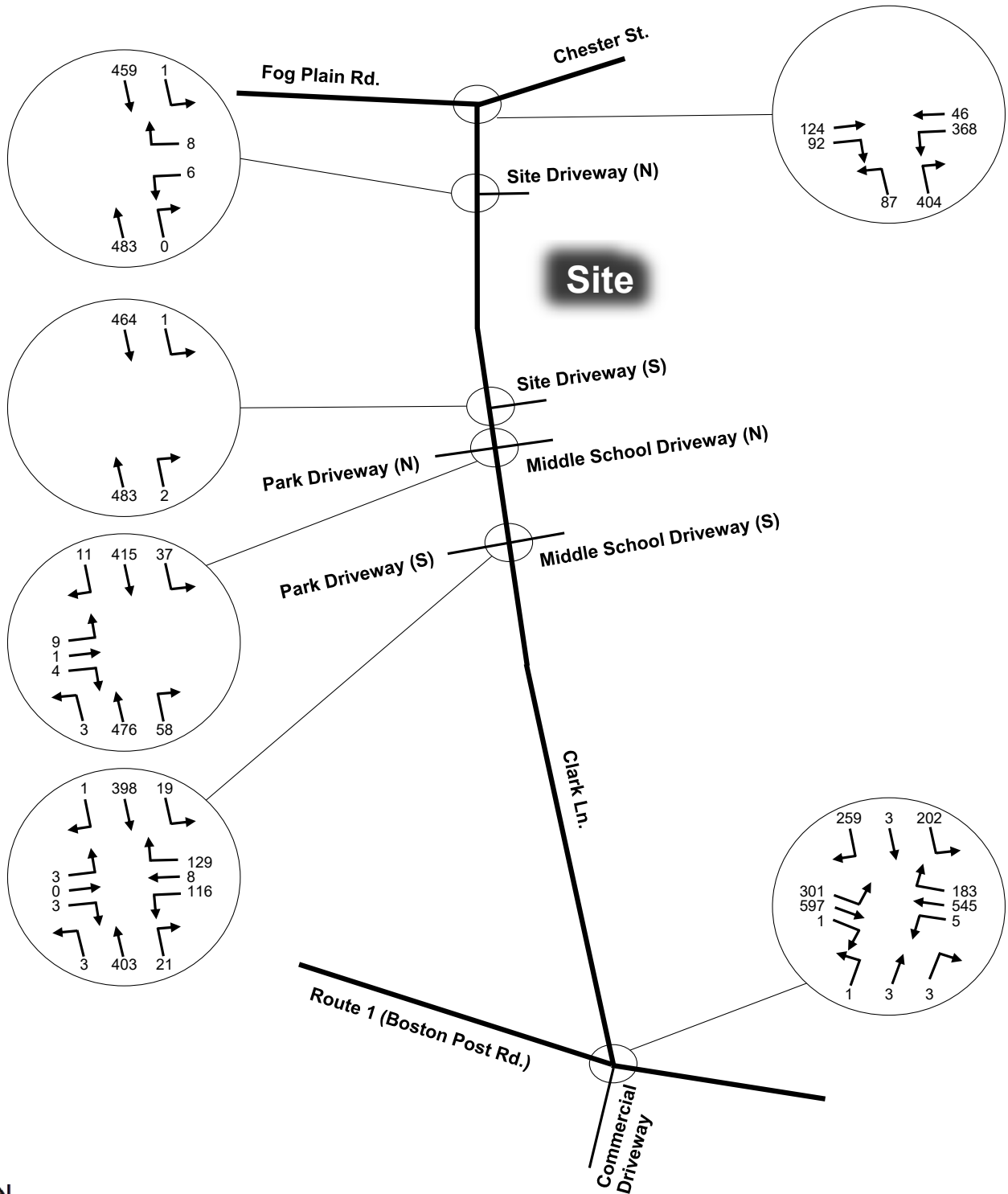
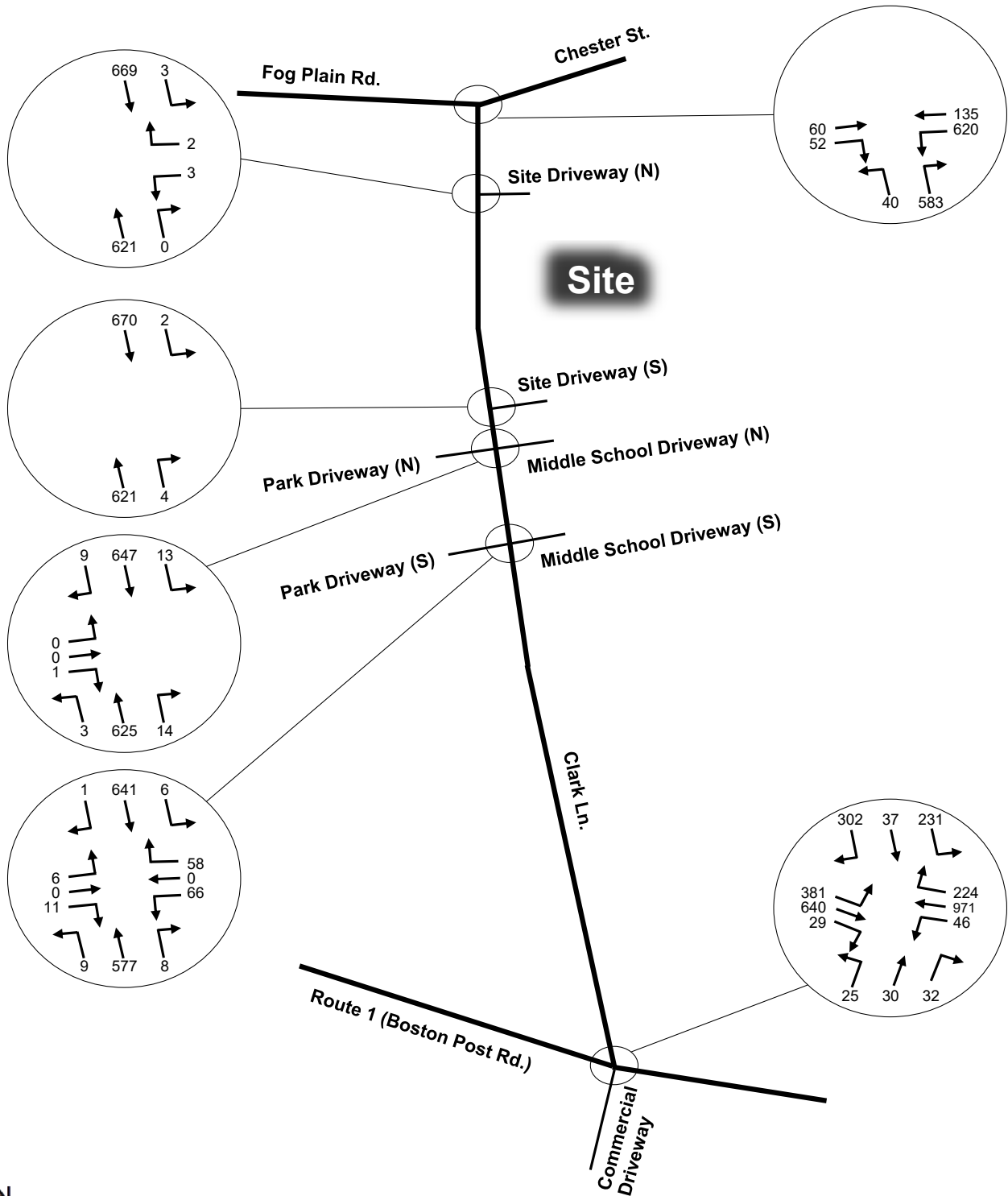


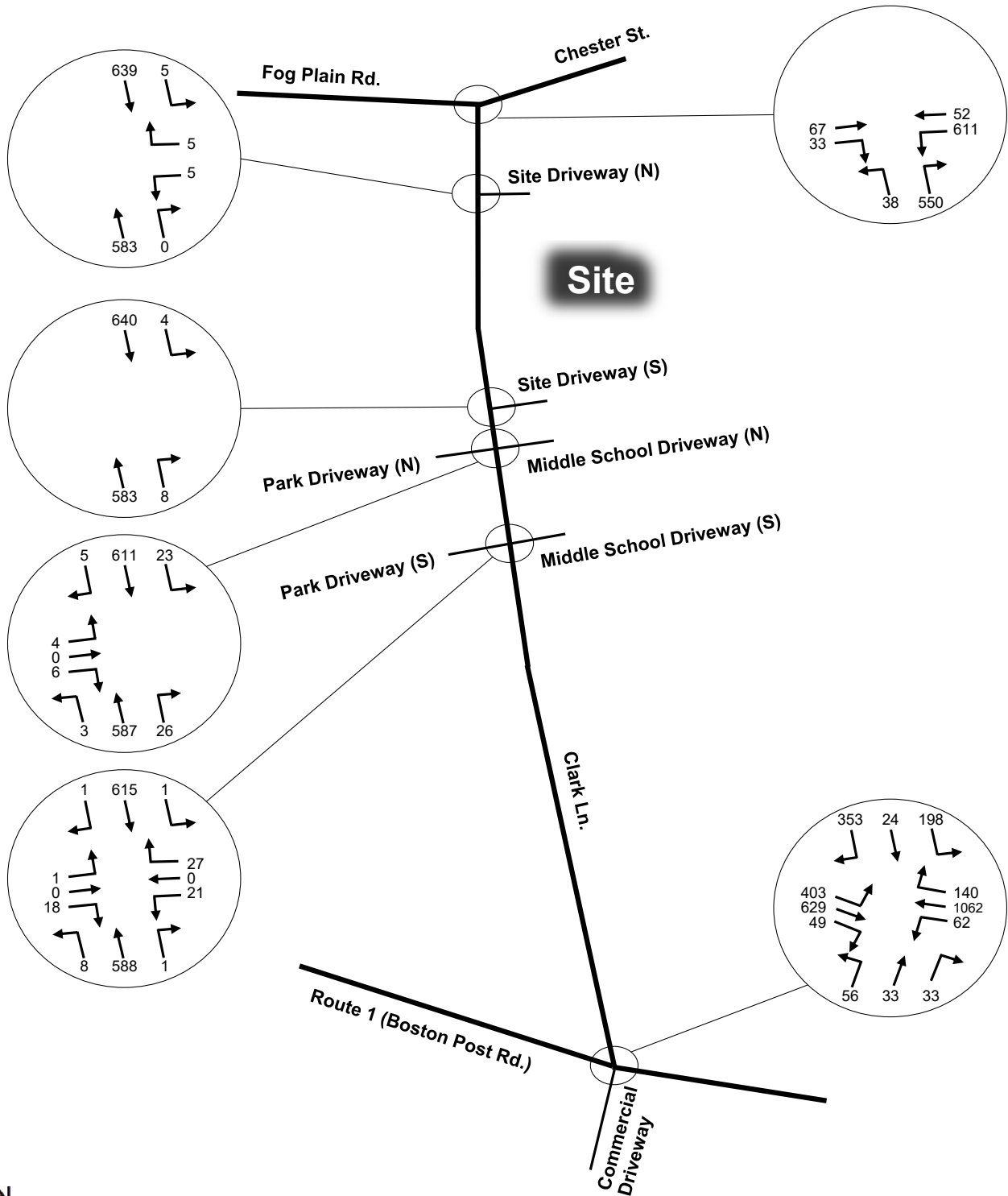
Figure 6b Trip Generation
Weekday Afternoon Peak Hour of Adjacent Streets



**Figure 7 Year 2025 Build Traffic Volumes
Weekday Morning Peak Hour of Adjacent Streets**



**Figure 8a Year 2025 Build Traffic Volumes
Weekday Afternoon Peak Hour of School**



**Figure 8b Year 2025 Build Traffic Volumes
Weekday Afternoon Peak Hour of Adjacent Streets**

Intersection												
Int Delay, s/veh	0.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕						↕			↕	
Traffic Vol, veh/h	9	1	4	0	0	0	3	463	58	37	399	11
Future Vol, veh/h	9	1	4	0	0	0	3	463	58	37	399	11
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	16979	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	10	1	4	0	0	0	3	498	62	40	429	12

Major/Minor	Minor2			Major1			Major2		
Conflicting Flow All	1050	1081	435	441	0	0	560	0	0
Stage 1	515	515	-	-	-	-	-	-	-
Stage 2	535	566	-	-	-	-	-	-	-
Critical Hdwy	6.43	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	5.43	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.43	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	251	217	619	1114	-	-	1006	-	-
Stage 1	598	533	-	-	-	-	-	-	-
Stage 2	585	506	-	-	-	-	-	-	-
Platoon blocked, %					-	-		-	-
Mov Cap-1 Maneuver	237	0	619	1114	-	-	1006	-	-
Mov Cap-2 Maneuver	237	0	-	-	-	-	-	-	-
Stage 1	596	0	-	-	-	-	-	-	-
Stage 2	554	0	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	18	0	0.7
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	SBL	SBT	SBR
Capacity (veh/h)	1114	-	-	293	1006	-	-
HCM Lane V/C Ratio	0.003	-	-	0.051	0.04	-	-
HCM Control Delay (s)	8.2	0	-	18	8.7	0	-
HCM Lane LOS	A	A	-	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.1	-	-

Intersection												
Int Delay, s/veh	8.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	0	3	116	8	129	3	392	21	19	383	1
Future Vol, veh/h	3	0	3	116	8	129	3	392	21	19	383	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	7	7	7	7	7	7	7	7	7	7	7	7
Mvmt Flow	3	0	3	120	8	133	3	404	22	20	395	1
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	928	868	396	858	857	415	396	0	0	426	0	0
Stage 1	436	436	-	421	421	-	-	-	-	-	-	-
Stage 2	492	432	-	437	436	-	-	-	-	-	-	-
Critical Hdwy	7.17	6.57	6.27	7.17	6.57	6.27	4.17	-	-	4.17	-	-
Critical Hdwy Stg 1	6.17	5.57	-	6.17	5.57	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.17	5.57	-	6.17	5.57	-	-	-	-	-	-	-
Follow-up Hdwy	3.563	4.063	3.363	3.563	4.063	3.363	2.263	-	-	2.263	-	-
Pot Cap-1 Maneuver	243	285	643	271	289	627	1136	-	-	1107	-	-
Stage 1	589	571	-	600	580	-	-	-	-	-	-	-
Stage 2	549	574	-	589	571	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	183	278	643	264	281	627	1136	-	-	1107	-	-
Mov Cap-2 Maneuver	183	278	-	264	281	-	-	-	-	-	-	-
Stage 1	587	558	-	598	578	-	-	-	-	-	-	-
Stage 2	425	572	-	573	558	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	17.9		33.6		0.1		0.4					
HCM LOS	C		D									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1136	-	-	285	376	1107	-	-				
HCM Lane V/C Ratio	0.003	-	-	0.022	0.694	0.018	-	-				
HCM Control Delay (s)	8.2	0	-	17.9	33.6	8.3	0	-				
HCM Lane LOS	A	A	-	C	D	A	A	-				
HCM 95th %tile O(veh)	0	-	-	0.1	5	0.1	-	-				

HCM Signalized Intersection Capacity Analysis

5: Commercial Driveway/Clark Ln. & Route 1 (Boston Post Rd.)

03/06/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	293	583	1	5	532	178	1	3	3	195	3	249
Future Volume (vph)	293	583	1	5	532	178	1	3	3	195	3	249
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.3		4.0	6.3			4.9	4.9		4.9	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	1.00
Frt	1.00	1.00		1.00	0.96			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.99	1.00		0.95	1.00
Satd. Flow (prot)	1752	3504		1752	3373			1822	1568		1758	1568
Flt Permitted	0.27	1.00		0.41	1.00			0.94	1.00		0.73	1.00
Satd. Flow (perm)	498	3504		763	3373			1737	1568		1341	1568
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	315	627	1	5	572	191	1	3	3	210	3	268
RTOR Reduction (vph)	0	0	0	0	40	0	0	0	2	0	0	106
Lane Group Flow (vph)	315	628	0	5	723	0	0	4	1	0	213	162
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Prot	Perm	NA	pt+ov
Protected Phases	1	6		5	2			4	4		4	1 4
Permitted Phases	6			2			4			4		
Actuated Green, G (s)	48.0	42.8		34.8	33.6			15.8	15.8		15.8	31.1
Effective Green, g (s)	48.0	42.8		34.8	33.6			15.8	15.8		15.8	26.2
Actuated g/C Ratio	0.64	0.57		0.46	0.45			0.21	0.21		0.21	0.35
Clearance Time (s)	4.0	6.3		4.0	6.3			4.9	4.9		4.9	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	492	1999		369	1511			365	330		282	547
v/s Ratio Prot	c0.09	0.18		0.00	0.21				0.00			0.10
v/s Ratio Perm	c0.32			0.01				0.00			c0.16	
v/c Ratio	0.64	0.31		0.01	0.48			0.01	0.00		0.76	0.30
Uniform Delay, d1	7.1	8.4		10.8	14.5			23.4	23.4		27.8	17.7
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	2.8	0.4		0.0	1.1			0.0	0.0		10.9	0.3
Delay (s)	9.9	8.8		10.8	15.6			23.4	23.4		38.7	18.0
Level of Service	A	A		B	B			C	C		D	B
Approach Delay (s)		9.2			15.6			23.4			27.2	
Approach LOS		A			B			C			C	
Intersection Summary												
HCM 2000 Control Delay			15.4			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.70									
Actuated Cycle Length (s)			75.0			Sum of lost time (s)			15.2			
Intersection Capacity Utilization			66.9%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

Intersection												
Int Delay, s/veh	0.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕						↕			↕	
Traffic Vol, veh/h	0	0	1	0	0	0	3	606	14	13	629	9
Future Vol, veh/h	0	0	1	0	0	0	3	606	14	13	629	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	16979	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	0	0	1	0	0	0	3	652	15	14	676	10
Major/Minor	Minor2						Major1			Major2		
Conflicting Flow All	1375	1382	681				686	0	0	667	0	0
Stage 1	709	709	-				-	-	-	-	-	-
Stage 2	666	673	-				-	-	-	-	-	-
Critical Hdwy	6.41	6.51	6.21				4.11	-	-	4.11	-	-
Critical Hdwy Stg 1	5.41	5.51	-				-	-	-	-	-	-
Critical Hdwy Stg 2	5.41	5.51	-				-	-	-	-	-	-
Follow-up Hdwy	3.509	4.009	3.309				2.209	-	-	2.209	-	-
Pot Cap-1 Maneuver	161	145	452				912	-	-	927	-	-
Stage 1	490	439	-				-	-	-	-	-	-
Stage 2	513	456	-				-	-	-	-	-	-
Platoon blocked, %							-	-		-	-	
Mov Cap-1 Maneuver	156	0	452				912	-	-	927	-	-
Mov Cap-2 Maneuver	156	0	-				-	-	-	-	-	-
Stage 1	488	0	-				-	-	-	-	-	-
Stage 2	501	0	-				-	-	-	-	-	-
Approach	EB						NB			SB		
HCM Control Delay, s	13						0			0.2		
HCM LOS	B											
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	SBL	SBT	SBR					
Capacity (veh/h)	912	-	-	452	927	-	-					
HCM Lane V/C Ratio	0.004	-	-	0.002	0.015	-	-					
HCM Control Delay (s)	9	0	-	13	8.9	0	-					
HCM Lane LOS	A	A	-	B	A	A	-					
HCM 95th %tile O(veh)	0	-	-	0	0	-	-					

Intersection												
Int Delay, s/veh	20.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	0	11	66	0	58	9	559	8	6	623	1
Future Vol, veh/h	6	0	11	66	0	58	9	559	8	6	623	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	77	77	77	77	77	77	77	77	77	77	77	77
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	0	14	86	0	75	12	726	10	8	809	1
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1619	1586	810	1588	1581	731	810	0	0	736	0	0
Stage 1	826	826	-	755	755	-	-	-	-	-	-	-
Stage 2	793	760	-	833	826	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	83	108	380	87	109	422	816	-	-	870	-	-
Stage 1	366	387	-	401	417	-	-	-	-	-	-	-
Stage 2	382	414	-	363	387	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	66	103	380	~ 81	104	422	816	-	-	870	-	-
Mov Cap-2 Maneuver	66	103	-	~ 81	104	-	-	-	-	-	-	-
Stage 1	357	380	-	391	407	-	-	-	-	-	-	-
Stage 2	306	404	-	343	380	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	35		221.8		0.1		0.1					
HCM LOS	E		F									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	816	-	-	142	130	870	-	-				
HCM Lane V/C Ratio	0.014	-	-	0.155	1.239	0.009	-	-				
HCM Control Delay (s)	9.5	0	-	35	221.8	9.2	0	-				
HCM Lane LOS	A	A	-	E	F	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.5	9.9	0	-	-				
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s			+: Computation Not Defined				*: All major volume in platoon			

HCM Signalized Intersection Capacity Analysis

5: Commercial Driveway/Clark Ln. & Route 1 (Boston Post Rd.)

03/06/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	369	625	28	45	948	218	24	29	31	225	36	293
Future Volume (vph)	369	625	28	45	948	218	24	29	31	225	36	293
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.3		4.0	6.3			4.9	4.9		4.9	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	1.00
Frt	1.00	0.99		1.00	0.97			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.98	1.00		0.96	1.00
Satd. Flow (prot)	1787	3551		1787	3474			1839	1599		1803	1599
Flt Permitted	0.12	1.00		0.39	1.00			0.77	1.00		0.72	1.00
Satd. Flow (perm)	223	3551		729	3474			1443	1599		1345	1599
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	393	665	30	48	1009	232	26	31	33	239	38	312
RTOR Reduction (vph)	0	4	0	0	27	0	0	0	25	0	0	29
Lane Group Flow (vph)	393	691	0	48	1214	0	0	57	8	0	277	283
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Prot	Perm	NA	pt+ov
Protected Phases	1	6		5	2			4	4		4	1 4
Permitted Phases	6			2			4			4		
Actuated Green, G (s)	46.4	38.4		33.7	29.7			17.4	17.4		17.4	35.0
Effective Green, g (s)	46.4	38.4		33.7	29.7			17.4	17.4		17.4	30.1
Actuated g/C Ratio	0.62	0.51		0.45	0.40			0.23	0.23		0.23	0.40
Clearance Time (s)	4.0	6.3		4.0	6.3			4.9	4.9		4.9	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	402	1818		383	1375			334	370		312	641
v/s Ratio Prot	c0.17	0.19		0.01	0.35				0.00			0.18
v/s Ratio Perm	c0.44			0.05				0.04			c0.21	
v/c Ratio	0.98	0.38		0.13	0.88			0.17	0.02		0.89	0.44
Uniform Delay, d1	20.8	11.1		11.7	21.0			23.0	22.2		27.9	16.3
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	38.6	0.6		0.1	8.5			0.2	0.0		24.8	0.5
Delay (s)	59.3	11.7		11.8	29.6			23.3	22.2		52.6	16.8
Level of Service	E	B		B	C			C	C		D	B
Approach Delay (s)		28.9			28.9			22.9			33.7	
Approach LOS		C			C			C			C	
Intersection Summary												
HCM 2000 Control Delay			29.6			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.99									
Actuated Cycle Length (s)			75.0			Sum of lost time (s)			15.2			
Intersection Capacity Utilization			87.3%			ICU Level of Service			E			
Analysis Period (min)			15									
c Critical Lane Group												

Intersection												
Int Delay, s/veh	0.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕						↕			↕	
Traffic Vol, veh/h	4	0	6	0	0	0	3	565	26	23	592	5
Future Vol, veh/h	4	0	6	0	0	0	3	565	26	23	592	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	16979	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	4	0	6	0	0	0	3	595	27	24	623	5

Major/Minor	Minor2			Major1		Major2			
Conflicting Flow All	1289	1302	626	628	0	0	622	0	0
Stage 1	674	674	-	-	-	-	-	-	-
Stage 2	615	628	-	-	-	-	-	-	-
Critical Hdwy	6.41	6.51	6.21	4.11	-	-	4.11	-	-
Critical Hdwy Stg 1	5.41	5.51	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.41	5.51	-	-	-	-	-	-	-
Follow-up Hdwy	3.509	4.009	3.309	2.209	-	-	2.209	-	-
Pot Cap-1 Maneuver	182	162	486	959	-	-	964	-	-
Stage 1	508	455	-	-	-	-	-	-	-
Stage 2	541	477	-	-	-	-	-	-	-
Platoon blocked, %					-	-		-	-
Mov Cap-1 Maneuver	174	0	486	959	-	-	964	-	-
Mov Cap-2 Maneuver	174	0	-	-	-	-	-	-	-
Stage 1	505	0	-	-	-	-	-	-	-
Stage 2	520	0	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	18.2	0	0.3
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	SBL	SBT	SBR
Capacity (veh/h)	959	-	-	283	964	-	-
HCM Lane V/C Ratio	0.003	-	-	0.037	0.025	-	-
HCM Control Delay (s)	8.8	0	-	18.2	8.8	0	-
HCM Lane LOS	A	A	-	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	-	-

Intersection												
Int Delay, s/veh	1.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	0	18	21	0	27	8	566	1	1	596	1
Future Vol, veh/h	1	0	18	21	0	27	8	566	1	1	596	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	0	19	23	0	29	9	609	1	1	641	1
Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	1286	1272	642	1281	1272	610	642	0	0	610	0	0
Stage 1	644	644	-	628	628	-	-	-	-	-	-	-
Stage 2	642	628	-	653	644	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	141	168	474	142	168	494	943	-	-	969	-	-
Stage 1	461	468	-	471	476	-	-	-	-	-	-	-
Stage 2	463	476	-	456	468	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	131	165	474	134	165	494	943	-	-	969	-	-
Mov Cap-2 Maneuver	131	165	-	134	165	-	-	-	-	-	-	-
Stage 1	455	467	-	464	469	-	-	-	-	-	-	-
Stage 2	430	469	-	437	467	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Control Delay, s	14.1		25.5			0.1			0			
HCM LOS	B		D									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	943	-	-	417	227	969	-	-				
HCM Lane V/C Ratio	0.009	-	-	0.049	0.227	0.001	-	-				
HCM Control Delay (s)	8.9	0	-	14.1	25.5	8.7	0	-				
HCM Lane LOS	A	A	-	B	D	A	A	-				
HCM 95th %tile O(veh)	0	-	-	0.2	0.8	0	-	-				

HCM Signalized Intersection Capacity Analysis

5: Commercial Driveway/Clark Ln. & Route 1 (Boston Post Rd.)

03/06/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	369	614	48	61	1037	134	55	32	32	191	23	342
Future Volume (vph)	369	614	48	61	1037	134	55	32	32	191	23	342
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.3		4.0	6.3			4.9	4.9		4.9	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	1.00
Frt	1.00	0.99		1.00	0.98			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.97	1.00		0.96	1.00
Satd. Flow (prot)	1787	3536		1787	3513			1824	1599		1801	1599
Flt Permitted	0.12	1.00		0.37	1.00			0.59	1.00		0.68	1.00
Satd. Flow (perm)	223	3536		701	3513			1113	1599		1282	1599
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	410	682	53	68	1152	149	61	36	36	212	26	380
RTOR Reduction (vph)	0	7	0	0	13	0	0	0	28	0	0	29
Lane Group Flow (vph)	410	728	0	68	1288	0	0	97	8	0	238	351
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Prot	Perm	NA	pt+ov
Protected Phases	1	6		5	2			4	4		4	1 4
Permitted Phases	6			2			4			4		
Actuated Green, G (s)	47.0	37.7		35.0	29.7			16.8	16.8		16.8	35.0
Effective Green, g (s)	47.0	37.7		35.0	29.7			16.8	16.8		16.8	30.1
Actuated g/C Ratio	0.63	0.50		0.47	0.40			0.22	0.22		0.22	0.40
Clearance Time (s)	4.0	6.3		4.0	6.3			4.9	4.9		4.9	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	417	1777		403	1391			249	358		287	641
v/s Ratio Prot	c0.17	0.21		0.01	0.37				0.01			0.22
v/s Ratio Perm	c0.44			0.07				0.09			c0.19	
v/c Ratio	0.98	0.41		0.17	0.93			0.39	0.02		0.83	0.55
Uniform Delay, d1	21.3	11.7		11.1	21.6			24.7	22.7		27.7	17.2
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	39.4	0.7		0.2	11.9			1.0	0.0		17.6	1.0
Delay (s)	60.6	12.4		11.3	33.5			25.8	22.7		45.4	18.2
Level of Service	E	B		B	C			C	C		D	B
Approach Delay (s)		29.7			32.4			24.9			28.7	
Approach LOS		C			C			C			C	
Intersection Summary												
HCM 2000 Control Delay			30.4			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.98									
Actuated Cycle Length (s)			75.0			Sum of lost time (s)			15.2			
Intersection Capacity Utilization			84.5%			ICU Level of Service			E			
Analysis Period (min)			15									
c Critical Lane Group												

Intersection												
Int Delay, s/veh	0.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕						↕			↕	
Traffic Vol, veh/h	9	1	4	0	0	0	3	474	58	37	409	11
Future Vol, veh/h	9	1	4	0	0	0	3	474	58	37	409	11
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	16979	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	10	1	4	0	0	0	3	510	62	40	440	12

Major/Minor	Minor2			Major1		Major2				
Conflicting Flow All	1073	1104	446		452	0	0	572	0	0
Stage 1	526	526	-		-	-	-	-	-	-
Stage 2	547	578	-		-	-	-	-	-	-
Critical Hdwy	6.43	6.53	6.23		4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	5.43	5.53	-		-	-	-	-	-	-
Critical Hdwy Stg 2	5.43	5.53	-		-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327		2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	243	210	610		1103	-	-	996	-	-
Stage 1	591	527	-		-	-	-	-	-	-
Stage 2	578	500	-		-	-	-	-	-	-
Platoon blocked, %						-	-		-	-
Mov Cap-1 Maneuver	229	0	610		1103	-	-	996	-	-
Mov Cap-2 Maneuver	229	0	-		-	-	-	-	-	-
Stage 1	589	0	-		-	-	-	-	-	-
Stage 2	547	0	-		-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	18.4	0	0.7
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	SBL	SBT	SBR
Capacity (veh/h)	1103	-	-	283	996	-	-
HCM Lane V/C Ratio	0.003	-	-	0.053	0.04	-	-
HCM Control Delay (s)	8.3	0	-	18.4	8.8	0	-
HCM Lane LOS	A	A	-	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.1	-	-

Intersection												
Int Delay, s/veh	8.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	0	3	116	8	129	3	401	21	19	392	1
Future Vol, veh/h	3	0	3	116	8	129	3	401	21	19	392	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	7	7	7	7	7	7	7	7	7	7	7	7
Mvmt Flow	3	0	3	120	8	133	3	413	22	20	404	1

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	946	886	405	876	875	424	405	0	0	435	0	0
Stage 1	445	445	-	430	430	-	-	-	-	-	-	-
Stage 2	501	441	-	446	445	-	-	-	-	-	-	-
Critical Hdwy	7.17	6.57	6.27	7.17	6.57	6.27	4.17	-	-	4.17	-	-
Critical Hdwy Stg 1	6.17	5.57	-	6.17	5.57	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.17	5.57	-	6.17	5.57	-	-	-	-	-	-	-
Follow-up Hdwy	3.563	4.063	3.363	3.563	4.063	3.363	2.263	-	-	2.263	-	-
Pot Cap-1 Maneuver	236	278	635	264	282	619	1127	-	-	1099	-	-
Stage 1	583	566	-	594	575	-	-	-	-	-	-	-
Stage 2	543	568	-	582	566	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	177	270	635	257	274	619	1127	-	-	1099	-	-
Mov Cap-2 Maneuver	177	270	-	257	274	-	-	-	-	-	-	-
Stage 1	581	553	-	592	573	-	-	-	-	-	-	-
Stage 2	419	566	-	566	553	-	-	-	-	-	-	-

Approach	EB		WB		NB			SB				
HCM Control Delay, s	18.3		35.6		0.1			0.4				
HCM LOS	C		E									

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1127	-	-	277	367	1099	-
HCM Lane V/C Ratio	0.003	-	-	0.022	0.711	0.018	-
HCM Control Delay (s)	8.2	0	-	18.3	35.6	8.3	0
HCM Lane LOS	A	A	-	C	E	A	A
HCM 95th %tile Q(veh)	0	-	-	0.1	5.3	0.1	-

HCM Signalized Intersection Capacity Analysis

5: Commercial Driveway/Clark Ln. & Route 1 (Boston Post Rd.)

03/07/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	300	597	1	5	545	182	1	3	3	200	3	255
Future Volume (vph)	300	597	1	5	545	182	1	3	3	200	3	255
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.3		4.0	6.3			4.9	4.9		4.9	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	1.00
Frt	1.00	1.00		1.00	0.96			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.99	1.00		0.95	1.00
Satd. Flow (prot)	1752	3504		1752	3373			1822	1568		1758	1568
Flt Permitted	0.26	1.00		0.41	1.00			0.94	1.00		0.73	1.00
Satd. Flow (perm)	480	3504		752	3373			1736	1568		1341	1568
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	323	642	1	5	586	196	1	3	3	215	3	274
RTOR Reduction (vph)	0	0	0	0	40	0	0	0	2	0	0	101
Lane Group Flow (vph)	323	643	0	5	742	0	0	4	1	0	218	173
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Prot	Perm	NA	pt+ov
Protected Phases	1	6		5	2			4	4		4	1 4
Permitted Phases	6			2			4			4		
Actuated Green, G (s)	47.9	42.7		34.6	33.4			15.9	15.9		15.9	31.3
Effective Green, g (s)	47.9	42.7		34.6	33.4			15.9	15.9		15.9	26.4
Actuated g/C Ratio	0.64	0.57		0.46	0.45			0.21	0.21		0.21	0.35
Clearance Time (s)	4.0	6.3		4.0	6.3			4.9	4.9		4.9	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	484	1994		362	1502			368	332		284	551
v/s Ratio Prot	c0.09	0.18		0.00	0.22				0.00			0.11
v/s Ratio Perm	c0.33			0.01				0.00			c0.16	
v/c Ratio	0.67	0.32		0.01	0.49			0.01	0.00		0.77	0.31
Uniform Delay, d1	7.3	8.5		10.9	14.8			23.3	23.3		27.8	17.7
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	3.5	0.4		0.0	1.2			0.0	0.0		11.7	0.3
Delay (s)	10.8	8.9		10.9	16.0			23.4	23.3		39.6	18.0
Level of Service	B	A		B	B			C	C		D	B
Approach Delay (s)		9.6			15.9			23.3			27.6	
Approach LOS		A			B			C			C	
Intersection Summary												
HCM 2000 Control Delay			15.8			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.73									
Actuated Cycle Length (s)			75.0			Sum of lost time (s)			15.2			
Intersection Capacity Utilization			68.1%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

Intersection												
Int Delay, s/veh	0.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕						↕			↕	
Traffic Vol, veh/h	0	0	1	0	0	0	3	621	14	13	644	9
Future Vol, veh/h	0	0	1	0	0	0	3	621	14	13	644	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	16979	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	0	0	1	0	0	0	3	668	15	14	692	10
Major/Minor	Minor2						Major1			Major2		
Conflicting Flow All	1407	1414	697				702	0	0	683	0	0
Stage 1	725	725	-				-	-	-	-	-	-
Stage 2	682	689	-				-	-	-	-	-	-
Critical Hdwy	6.41	6.51	6.21				4.11	-	-	4.11	-	-
Critical Hdwy Stg 1	5.41	5.51	-				-	-	-	-	-	-
Critical Hdwy Stg 2	5.41	5.51	-				-	-	-	-	-	-
Follow-up Hdwy	3.509	4.009	3.309				2.209	-	-	2.209	-	-
Pot Cap-1 Maneuver	154	138	443				900	-	-	915	-	-
Stage 1	481	431	-				-	-	-	-	-	-
Stage 2	504	448	-				-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	149	0	443				900	-	-	915	-	-
Mov Cap-2 Maneuver	149	0	-				-	-	-	-	-	-
Stage 1	479	0	-				-	-	-	-	-	-
Stage 2	491	0	-				-	-	-	-	-	-
Approach	EB						NB			SB		
HCM Control Delay, s	13.1						0			0.2		
HCM LOS	B											
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	SBL	SBT	SBR					
Capacity (veh/h)	900	-	-	443	915	-	-					
HCM Lane V/C Ratio	0.004	-	-	0.002	0.015	-	-					
HCM Control Delay (s)	9	0	-	13.1	9	0	-					
HCM Lane LOS	A	A	-	B	A	A	-					
HCM 95th %tile O(veh)	0	-	-	0	0	-	-					

Intersection												
Int Delay, s/veh	23.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	6	0	11	66	0	58	9	573	8	6	638	1
Future Vol, veh/h	6	0	11	66	0	58	9	573	8	6	638	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	77	77	77	77	77	77	77	77	77	77	77	77
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	0	14	86	0	75	12	744	10	8	829	1
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1657	1624	830	1626	1619	749	830	0	0	754	0	0
Stage 1	846	846	-	773	773	-	-	-	-	-	-	-
Stage 2	811	778	-	853	846	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	78	102	370	~ 82	103	412	802	-	-	856	-	-
Stage 1	357	378	-	392	409	-	-	-	-	-	-	-
Stage 2	373	407	-	354	378	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	62	98	370	~ 76	99	412	802	-	-	856	-	-
Mov Cap-2 Maneuver	62	98	-	~ 76	99	-	-	-	-	-	-	-
Stage 1	348	372	-	382	398	-	-	-	-	-	-	-
Stage 2	297	396	-	335	372	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	37.1		252.5		0.1		0.1					
HCM LOS	E		F									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	802	-	-	134	123	856	-	-				
HCM Lane V/C Ratio	0.015	-	-	0.165	1.309	0.009	-	-				
HCM Control Delay (s)	9.6	0	-	37.1	252.5	9.2	0	-				
HCM Lane LOS	A	A	-	E	F	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.6	10.5	0	-	-				
Notes												
~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon												

HCM Signalized Intersection Capacity Analysis

5: Commercial Driveway/Clark Ln. & Route 1 (Boston Post Rd.)

03/07/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	378	640	29	46	971	223	25	30	32	230	37	300
Future Volume (vph)	378	640	29	46	971	223	25	30	32	230	37	300
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.3		4.0	6.3			4.9	4.9		4.9	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	1.00
Frt	1.00	0.99		1.00	0.97			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.98	1.00		0.96	1.00
Satd. Flow (prot)	1787	3551		1787	3474			1839	1599		1803	1599
Flt Permitted	0.12	1.00		0.38	1.00			0.75	1.00		0.71	1.00
Satd. Flow (perm)	223	3551		717	3474			1406	1599		1343	1599
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	402	681	31	49	1033	237	27	32	34	245	39	319
RTOR Reduction (vph)	0	4	0	0	27	0	0	0	26	0	0	29
Lane Group Flow (vph)	402	708	0	49	1243	0	0	59	8	0	284	290
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Prot	Perm	NA	pt+ov
Protected Phases	1	6		5	2			4	4		4	1 4
Permitted Phases	6			2			4			4		
Actuated Green, G (s)	46.3	38.3		33.7	29.7			17.5	17.5		17.5	35.0
Effective Green, g (s)	46.3	38.3		33.7	29.7			17.5	17.5		17.5	30.1
Actuated g/C Ratio	0.62	0.51		0.45	0.40			0.23	0.23		0.23	0.40
Clearance Time (s)	4.0	6.3		4.0	6.3			4.9	4.9		4.9	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	400	1813		379	1375			328	373		313	641
v/s Ratio Prot	c0.17	0.20		0.01	0.36				0.00			0.18
v/s Ratio Perm	c0.45			0.05				0.04			c0.21	
v/c Ratio	1.00	0.39		0.13	0.90			0.18	0.02		0.91	0.45
Uniform Delay, d1	21.3	11.2		11.7	21.3			23.0	22.2		28.0	16.4
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	46.3	0.6		0.2	10.0			0.3	0.0		28.2	0.5
Delay (s)	67.5	11.9		11.8	31.3			23.3	22.2		56.2	16.9
Level of Service	E	B		B	C			C	C		E	B
Approach Delay (s)		31.9			30.6			22.9			35.4	
Approach LOS		C			C			C			D	
Intersection Summary												
HCM 2000 Control Delay			31.8			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			1.02									
Actuated Cycle Length (s)			75.0			Sum of lost time (s)			15.2			
Intersection Capacity Utilization			88.9%			ICU Level of Service			E			
Analysis Period (min)			15									
c Critical Lane Group												

Intersection												
Int Delay, s/veh	0.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕						↕			↕	
Traffic Vol, veh/h	4	0	6	0	0	0	3	579	26	23	606	5
Future Vol, veh/h	4	0	6	0	0	0	3	579	26	23	606	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	-	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	4	0	6	0	0	0	3	609	27	24	638	5
Major/Minor	Minor2						Major1			Major2		
Conflicting Flow All	1318	1331	641				643	0	0	636	0	0
Stage 1	689	689	-				-	-	-	-	-	-
Stage 2	629	642	-				-	-	-	-	-	-
Critical Hdwy	6.41	6.51	6.21				4.11	-	-	4.11	-	-
Critical Hdwy Stg 1	5.41	5.51	-				-	-	-	-	-	-
Critical Hdwy Stg 2	5.41	5.51	-				-	-	-	-	-	-
Follow-up Hdwy	3.509	4.009	3.309				2.209	-	-	2.209	-	-
Pot Cap-1 Maneuver	174	155	477				947	-	-	952	-	-
Stage 1	500	448	-				-	-	-	-	-	-
Stage 2	533	470	-				-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	166	0	477				947	-	-	952	-	-
Mov Cap-2 Maneuver	166	0	-				-	-	-	-	-	-
Stage 1	498	0	-				-	-	-	-	-	-
Stage 2	512	0	-				-	-	-	-	-	-
Approach	EB						NB			SB		
HCM Control Delay, s	18.7						0			0.3		
HCM LOS	C											
Minor Lane/Major Mvmt		NBL	NBT	NBR	EBLn1	SBL	SBT	SBR				
Capacity (veh/h)		947	-	-	273	952	-	-				
HCM Lane V/C Ratio		0.003	-	-	0.039	0.025	-	-				
HCM Control Delay (s)		8.8	0	-	18.7	8.9	0	-				
HCM Lane LOS		A	A	-	C	A	A	-				
HCM 95th %tile O(veh)		0	-	-	0.1	0.1	-	-				

Intersection												
Int Delay, s/veh	1.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	0	18	21	0	27	8	580	1	1	610	1
Future Vol, veh/h	1	0	18	21	0	27	8	580	1	1	610	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	0	19	23	0	29	9	624	1	1	656	1
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1316	1302	657	1311	1302	625	657	0	0	625	0	0
Stage 1	659	659	-	643	643	-	-	-	-	-	-	-
Stage 2	657	643	-	668	659	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	135	161	465	136	161	485	931	-	-	956	-	-
Stage 1	453	461	-	462	468	-	-	-	-	-	-	-
Stage 2	454	468	-	448	461	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	125	158	465	129	158	485	931	-	-	956	-	-
Mov Cap-2 Maneuver	125	158	-	129	158	-	-	-	-	-	-	-
Stage 1	446	460	-	455	461	-	-	-	-	-	-	-
Stage 2	420	461	-	428	460	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	14.3		26.3		0.1		0					
HCM LOS	B		D									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	931	-	-	407	220	956	-	-				
HCM Lane V/C Ratio	0.009	-	-	0.05	0.235	0.001	-	-				
HCM Control Delay (s)	8.9	0	-	14.3	26.3	8.8	0	-				
HCM Lane LOS	A	A	-	B	D	A	A	-				
HCM 95th %tile O(veh)	0	-	-	0.2	0.9	0	-	-				

HCM Signalized Intersection Capacity Analysis

5: Commercial Driveway/Clark Ln. & Route 1 (Boston Post Rd.)

03/07/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	398	629	49	62	1062	137	56	33	33	196	24	350
Future Volume (vph)	398	629	49	62	1062	137	56	33	33	196	24	350
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.3		4.0	6.3			4.9	4.9		4.9	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	1.00
Frt	1.00	0.99		1.00	0.98			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.97	1.00		0.96	1.00
Satd. Flow (prot)	1787	3536		1787	3513			1824	1599		1801	1599
Flt Permitted	0.12	1.00		0.37	1.00			0.58	1.00		0.68	1.00
Satd. Flow (perm)	223	3536		688	3513			1092	1599		1280	1599
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	442	699	54	69	1180	152	62	37	37	218	27	389
RTOR Reduction (vph)	0	7	0	0	13	0	0	0	29	0	0	29
Lane Group Flow (vph)	442	746	0	69	1319	0	0	99	8	0	245	360
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Prot	Perm	NA	pt+ov
Protected Phases	1	6		5	2			4	4		4	1 4
Permitted Phases	6			2			4			4		
Actuated Green, G (s)	46.8	37.5		35.0	29.7			17.0	17.0		17.0	35.0
Effective Green, g (s)	46.8	37.5		35.0	29.7			17.0	17.0		17.0	30.1
Actuated g/C Ratio	0.62	0.50		0.47	0.40			0.23	0.23		0.23	0.40
Clearance Time (s)	4.0	6.3		4.0	6.3			4.9	4.9		4.9	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	412	1768		398	1391			247	362		290	641
v/s Ratio Prot	c0.19	0.21		0.01	0.38				0.01			0.23
v/s Ratio Perm	c0.48			0.07				0.09			c0.19	
v/c Ratio	1.07	0.42		0.17	0.95			0.40	0.02		0.84	0.56
Uniform Delay, d1	21.6	11.9		11.1	21.9			24.7	22.5		27.7	17.4
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	65.1	0.7		0.2	14.6			1.1	0.0		19.6	1.1
Delay (s)	86.8	12.6		11.3	36.5			25.7	22.6		47.4	18.5
Level of Service	F	B		B	D			C	C		D	B
Approach Delay (s)		40.0			35.2			24.9			29.6	
Approach LOS		D			D			C			C	
Intersection Summary												
HCM 2000 Control Delay			35.5			HCM 2000 Level of Service				D		
HCM 2000 Volume to Capacity ratio			1.06									
Actuated Cycle Length (s)			75.0			Sum of lost time (s)			15.2			
Intersection Capacity Utilization			87.2%			ICU Level of Service			E			
Analysis Period (min)			15									
c Critical Lane Group												

Intersection												
Int Delay, s/veh	0.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕						↕			↕	
Traffic Vol, veh/h	9	1	4	0	0	0	3	476	58	37	415	11
Future Vol, veh/h	9	1	4	0	0	0	3	476	58	37	415	11
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	16979	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	10	1	4	0	0	0	3	512	62	40	446	12

Major/Minor	Minor2			Major1		Major2				
Conflicting Flow All	1081	1112	452		458	0	0	574	0	0
Stage 1	532	532	-		-	-	-	-	-	-
Stage 2	549	580	-		-	-	-	-	-	-
Critical Hdwy	6.43	6.53	6.23		4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	5.43	5.53	-		-	-	-	-	-	-
Critical Hdwy Stg 2	5.43	5.53	-		-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327		2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	240	208	605		1098	-	-	994	-	-
Stage 1	587	524	-		-	-	-	-	-	-
Stage 2	577	499	-		-	-	-	-	-	-
Platoon blocked, %						-	-		-	-
Mov Cap-1 Maneuver	226	0	605		1098	-	-	994	-	-
Mov Cap-2 Maneuver	226	0	-		-	-	-	-	-	-
Stage 1	585	0	-		-	-	-	-	-	-
Stage 2	546	0	-		-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	18.6	0	0.7
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	SBL	SBT	SBR
Capacity (veh/h)	1098	-	-	280	994	-	-
HCM Lane V/C Ratio	0.003	-	-	0.054	0.04	-	-
HCM Control Delay (s)	8.3	0	-	18.6	8.8	0	-
HCM Lane LOS	A	A	-	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.1	-	-

Intersection												
Int Delay, s/veh	8.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	0	3	116	8	129	3	403	21	19	398	1
Future Vol, veh/h	3	0	3	116	8	129	3	403	21	19	398	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	7	7	7	7	7	7	7	7	7	7	7	7
Mvmt Flow	3	0	3	120	8	133	3	415	22	20	410	1
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	954	894	411	884	883	426	411	0	0	437	0	0
Stage 1	451	451	-	432	432	-	-	-	-	-	-	-
Stage 2	503	443	-	452	451	-	-	-	-	-	-	-
Critical Hdwy	7.17	6.57	6.27	7.17	6.57	6.27	4.17	-	-	4.17	-	-
Critical Hdwy Stg 1	6.17	5.57	-	6.17	5.57	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.17	5.57	-	6.17	5.57	-	-	-	-	-	-	-
Follow-up Hdwy	3.563	4.063	3.363	3.563	4.063	3.363	2.263	-	-	2.263	-	-
Pot Cap-1 Maneuver	234	275	630	261	279	618	1121	-	-	1097	-	-
Stage 1	578	563	-	592	574	-	-	-	-	-	-	-
Stage 2	542	567	-	578	563	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	176	267	630	254	271	618	1121	-	-	1097	-	-
Mov Cap-2 Maneuver	176	267	-	254	271	-	-	-	-	-	-	-
Stage 1	576	549	-	590	572	-	-	-	-	-	-	-
Stage 2	418	565	-	561	549	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	18.4		36.3		0.1		0.4					
HCM LOS	C		E									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1121	-	-	275	364	1097	-	-				
HCM Lane V/C Ratio	0.003	-	-	0.022	0.717	0.018	-	-				
HCM Control Delay (s)	8.2	0	-	18.4	36.3	8.3	0	-				
HCM Lane LOS	A	A	-	C	E	A	A	-				
HCM 95th %tile O(veh)	0	-	-	0.1	5.4	0.1	-	-				

HCM 6th TWSC
17: Clark Ln. & Site Driveway (N)

03/07/2023

Intersection						
Int Delay, s/veh	0.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	6	8	483	0	1	459
Future Vol, veh/h	6	8	483	0	1	459
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	9	525	0	1	499
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1026	525	0	0	525	0
Stage 1	525	-	-	-	-	-
Stage 2	501	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	260	552	-	-	1042	-
Stage 1	593	-	-	-	-	-
Stage 2	609	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	260	552	-	-	1042	-
Mov Cap-2 Maneuver	260	-	-	-	-	-
Stage 1	593	-	-	-	-	-
Stage 2	608	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	15.1	0	0			
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	373	1042	-	
HCM Lane V/C Ratio	-	-	0.041	0.001	-	
HCM Control Delay (s)	-	-	15.1	8.5	0	
HCM Lane LOS	-	-	C	A	A	
HCM 95th %tile Q(veh)	-	-	0.1	0	-	

HCM Signalized Intersection Capacity Analysis

5: Commercial Driveway/Clark Ln. & Route 1 (Boston Post Rd.)

03/07/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	301	597	1	5	545	183	1	3	3	202	3	259
Future Volume (vph)	301	597	1	5	545	183	1	3	3	202	3	259
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.3		4.0	6.3			4.9	4.9		4.9	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	1.00
Frt	1.00	1.00		1.00	0.96			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.99	1.00		0.95	1.00
Satd. Flow (prot)	1752	3504		1752	3373			1822	1568		1758	1568
Flt Permitted	0.26	1.00		0.41	1.00			0.94	1.00		0.73	1.00
Satd. Flow (perm)	479	3504		752	3373			1736	1568		1341	1568
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	324	642	1	5	586	197	1	3	3	217	3	278
RTOR Reduction (vph)	0	0	0	0	40	0	0	0	2	0	0	101
Lane Group Flow (vph)	324	643	0	5	743	0	0	4	1	0	220	177
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Prot	Perm	NA	pt+ov
Protected Phases	1	6		5	2			4	4		4	1 4
Permitted Phases	6			2			4			4		
Actuated Green, G (s)	47.9	42.7		34.6	33.4			15.9	15.9		15.9	31.3
Effective Green, g (s)	47.9	42.7		34.6	33.4			15.9	15.9		15.9	26.4
Actuated g/C Ratio	0.64	0.57		0.46	0.45			0.21	0.21		0.21	0.35
Clearance Time (s)	4.0	6.3		4.0	6.3			4.9	4.9		4.9	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	484	1994		362	1502			368	332		284	551
v/s Ratio Prot	c0.09	0.18		0.00	0.22				0.00			0.11
v/s Ratio Perm	c0.33			0.01				0.00			c0.16	
v/c Ratio	0.67	0.32		0.01	0.49			0.01	0.00		0.77	0.32
Uniform Delay, d1	7.3	8.5		10.9	14.8			23.3	23.3		27.9	17.8
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	3.5	0.4		0.0	1.2			0.0	0.0		12.4	0.3
Delay (s)	10.8	8.9		10.9	16.0			23.4	23.3		40.2	18.1
Level of Service	B	A		B	B			C	C		D	B
Approach Delay (s)		9.6			15.9			23.3			27.9	
Approach LOS		A			B			C			C	
Intersection Summary												
HCM 2000 Control Delay			15.9			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.73									
Actuated Cycle Length (s)			75.0			Sum of lost time (s)			15.2			
Intersection Capacity Utilization			68.3%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

Intersection												
Int Delay, s/veh	0.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕						↕			↕	
Traffic Vol, veh/h	0	0	1	0	0	0	3	625	14	13	647	9
Future Vol, veh/h	0	0	1	0	0	0	3	625	14	13	647	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	16979	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	0	0	1	0	0	0	3	672	15	14	696	10

Major/Minor	Minor2			Major1			Major2		
Conflicting Flow All	1415	1422	701			706	0	0	687
Stage 1	729	729	-			-	-	-	-
Stage 2	686	693	-			-	-	-	-
Critical Hdwy	6.41	6.51	6.21			4.11	-	-	4.11
Critical Hdwy Stg 1	5.41	5.51	-			-	-	-	-
Critical Hdwy Stg 2	5.41	5.51	-			-	-	-	-
Follow-up Hdwy	3.509	4.009	3.309			2.209	-	-	2.209
Pot Cap-1 Maneuver	152	137	440			897	-	-	912
Stage 1	479	430	-			-	-	-	-
Stage 2	502	446	-			-	-	-	-
Platoon blocked, %							-	-	-
Mov Cap-1 Maneuver	147	0	440			897	-	-	912
Mov Cap-2 Maneuver	147	0	-			-	-	-	-
Stage 1	477	0	-			-	-	-	-
Stage 2	489	0	-			-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.2	0	0.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	SBL	SBT	SBR
Capacity (veh/h)	897	-	-	440	912	-	-
HCM Lane V/C Ratio	0.004	-	-	0.002	0.015	-	-
HCM Control Delay (s)	9	0	-	13.2	9	0	-
HCM Lane LOS	A	A	-	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0	-	-

Intersection												
Int Delay, s/veh	24											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	6	0	11	66	0	58	9	577	8	6	641	1
Future Vol, veh/h	6	0	11	66	0	58	9	577	8	6	641	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	77	77	77	77	77	77	77	77	77	77	77	77
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	0	14	86	0	75	12	749	10	8	832	1
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1665	1632	833	1634	1627	754	833	0	0	759	0	0
Stage 1	849	849	-	778	778	-	-	-	-	-	-	-
Stage 2	816	783	-	856	849	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	77	101	369	~ 81	102	409	800	-	-	852	-	-
Stage 1	356	377	-	389	407	-	-	-	-	-	-	-
Stage 2	371	404	-	352	377	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	61	97	369	~ 75	98	409	800	-	-	852	-	-
Mov Cap-2 Maneuver	61	97	-	~ 75	98	-	-	-	-	-	-	-
Stage 1	347	371	-	379	396	-	-	-	-	-	-	-
Stage 2	295	393	-	333	371	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	37.4		262.1		0.1		0.1					
HCM LOS	E		F									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	800	-	-	133	121	852	-	-				
HCM Lane V/C Ratio	0.015	-	-	0.166	1.331	0.009	-	-				
HCM Control Delay (s)	9.6	0	-	37.4	262.1	9.3	0	-				
HCM Lane LOS	A	A	-	E	F	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.6	10.7	0	-	-				
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s			+: Computation Not Defined				*: All major volume in platoon			

HCM 6th TWSC
17: Clark Ln. & Site Driveway (N)

03/07/2023

Intersection						
Int Delay, s/veh	0.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	3	2	621	0	3	669
Future Vol, veh/h	3	2	621	0	3	669
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	2	675	0	3	727
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1408	675	0	0	675	0
Stage 1	675	-	-	-	-	-
Stage 2	733	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	153	454	-	-	916	-
Stage 1	506	-	-	-	-	-
Stage 2	475	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	152	454	-	-	916	-
Mov Cap-2 Maneuver	152	-	-	-	-	-
Stage 1	506	-	-	-	-	-
Stage 2	473	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	22.9	0		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	207	916	-	
HCM Lane V/C Ratio	-	-	0.026	0.004	-	
HCM Control Delay (s)	-	-	22.9	8.9	0	
HCM Lane LOS	-	-	C	A	A	
HCM 95th %tile O(veh)	-	-	0.1	0	-	

HCM Signalized Intersection Capacity Analysis

5: Commercial Driveway/Clark Ln. & Route 1 (Boston Post Rd.)

03/07/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	381	640	29	46	971	224	25	30	32	231	37	302
Future Volume (vph)	381	640	29	46	971	224	25	30	32	231	37	302
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.3		4.0	6.3			4.9	4.9		4.9	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	1.00
Frt	1.00	0.99		1.00	0.97			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.98	1.00		0.96	1.00
Satd. Flow (prot)	1787	3551		1787	3474			1839	1599		1803	1599
Flt Permitted	0.12	1.00		0.38	1.00			0.75	1.00		0.71	1.00
Satd. Flow (perm)	223	3551		717	3474			1409	1599		1343	1599
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	405	681	31	49	1033	238	27	32	34	246	39	321
RTOR Reduction (vph)	0	4	0	0	27	0	0	0	26	0	0	29
Lane Group Flow (vph)	405	708	0	49	1244	0	0	59	8	0	285	292
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Prot	Perm	NA	pt+ov
Protected Phases	1	6		5	2			4	4		4	1 4
Permitted Phases	6			2			4			4		
Actuated Green, G (s)	46.2	38.2		33.7	29.7			17.6	17.6		17.6	35.0
Effective Green, g (s)	46.2	38.2		33.7	29.7			17.6	17.6		17.6	30.1
Actuated g/C Ratio	0.62	0.51		0.45	0.40			0.23	0.23		0.23	0.40
Clearance Time (s)	4.0	6.3		4.0	6.3			4.9	4.9		4.9	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	398	1808		379	1375			330	375		315	641
v/s Ratio Prot	c0.17	0.20		0.01	0.36				0.00			0.18
v/s Ratio Perm	c0.46			0.05				0.04			c0.21	
v/c Ratio	1.02	0.39		0.13	0.91			0.18	0.02		0.90	0.46
Uniform Delay, d1	21.3	11.3		11.7	21.3			22.9	22.1		27.9	16.5
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	49.6	0.6		0.2	10.1			0.3	0.0		27.7	0.5
Delay (s)	70.9	11.9		11.8	31.4			23.2	22.1		55.6	17.0
Level of Service	E	B		B	C			C	C		E	B
Approach Delay (s)		33.3			30.7			22.8			35.1	
Approach LOS		C			C			C			D	
Intersection Summary												
HCM 2000 Control Delay			32.2			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			1.03									
Actuated Cycle Length (s)			75.0			Sum of lost time (s)			15.2			
Intersection Capacity Utilization			89.2%			ICU Level of Service			E			
Analysis Period (min)			15									
c Critical Lane Group												

Intersection												
Int Delay, s/veh	0.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕						↕			↕	
Traffic Vol, veh/h	4	0	6	0	0	0	3	587	26	23	611	5
Future Vol, veh/h	4	0	6	0	0	0	3	587	26	23	611	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	16979	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	4	0	6	0	0	0	3	618	27	24	643	5

Major/Minor	Minor2			Major1			Major2		
Conflicting Flow All	1332	1345	646	648	0	0	645	0	0
Stage 1	694	694	-	-	-	-	-	-	-
Stage 2	638	651	-	-	-	-	-	-	-
Critical Hdwy	6.41	6.51	6.21	4.11	-	-	4.11	-	-
Critical Hdwy Stg 1	5.41	5.51	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.41	5.51	-	-	-	-	-	-	-
Follow-up Hdwy	3.509	4.009	3.309	2.209	-	-	2.209	-	-
Pot Cap-1 Maneuver	171	152	473	943	-	-	945	-	-
Stage 1	498	446	-	-	-	-	-	-	-
Stage 2	528	466	-	-	-	-	-	-	-
Platoon blocked, %					-	-		-	-
Mov Cap-1 Maneuver	163	0	473	943	-	-	945	-	-
Mov Cap-2 Maneuver	163	0	-	-	-	-	-	-	-
Stage 1	496	0	-	-	-	-	-	-	-
Stage 2	507	0	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	18.9	0	0.3
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	SBL	SBT	SBR
Capacity (veh/h)	943	-	-	269	945	-	-
HCM Lane V/C Ratio	0.003	-	-	0.039	0.026	-	-
HCM Control Delay (s)	8.8	0	-	18.9	8.9	0	-
HCM Lane LOS	A	A	-	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	-	-

Intersection												
Int Delay, s/veh	1.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	0	18	21	0	27	8	588	1	1	615	1
Future Vol, veh/h	1	0	18	21	0	27	8	588	1	1	615	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	0	19	23	0	29	9	632	1	1	661	1
Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	1329	1315	662	1324	1315	633	662	0	0	633	0	0
Stage 1	664	664	-	651	651	-	-	-	-	-	-	-
Stage 2	665	651	-	673	664	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	132	158	462	133	158	480	927	-	-	950	-	-
Stage 1	450	458	-	457	465	-	-	-	-	-	-	-
Stage 2	449	465	-	445	458	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	122	155	462	126	155	480	927	-	-	950	-	-
Mov Cap-2 Maneuver	122	155	-	126	155	-	-	-	-	-	-	-
Stage 1	443	457	-	450	458	-	-	-	-	-	-	-
Stage 2	416	458	-	426	457	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Control Delay, s	14.4		27			0.1			0			
HCM LOS	B		D									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	927	-	-	403	215	950	-	-				
HCM Lane V/C Ratio	0.009	-	-	0.051	0.24	0.001	-	-				
HCM Control Delay (s)	8.9	0	-	14.4	27	8.8	0	-				
HCM Lane LOS	A	A	-	B	D	A	A	-				
HCM 95th %tile O(veh)	0	-	-	0.2	0.9	0	-	-				

HCM 6th TWSC
17: Clark Ln. & Site Driveway (N)

03/07/2023

Intersection						
Int Delay, s/veh	0.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	5	583	0	5	639
Future Vol, veh/h	5	5	583	0	5	639
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	5	634	0	5	695
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1339	634	0	0	634	0
Stage 1	634	-	-	-	-	-
Stage 2	705	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	168	479	-	-	949	-
Stage 1	529	-	-	-	-	-
Stage 2	490	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	166	479	-	-	949	-
Mov Cap-2 Maneuver	166	-	-	-	-	-
Stage 1	529	-	-	-	-	-
Stage 2	486	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	20.2	0	0.1			
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	247	949	-	
HCM Lane V/C Ratio	-	-	0.044	0.006	-	
HCM Control Delay (s)	-	-	20.2	8.8	0	
HCM Lane LOS	-	-	C	A	A	
HCM 95th %tile Q(veh)	-	-	0.1	0	-	

HCM Signalized Intersection Capacity Analysis

5: Commercial Driveway/Clark Ln. & Route 1 (Boston Post Rd.)

03/07/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	403	629	49	62	1062	140	56	33	33	198	24	353
Future Volume (vph)	403	629	49	62	1062	140	56	33	33	198	24	353
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.3		4.0	6.3			4.9	4.9		4.9	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	1.00
Frt	1.00	0.99		1.00	0.98			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.97	1.00		0.96	1.00
Satd. Flow (prot)	1787	3536		1787	3512			1824	1599		1801	1599
Flt Permitted	0.12	1.00		0.37	1.00			0.58	1.00		0.68	1.00
Satd. Flow (perm)	223	3536		688	3512			1090	1599		1279	1599
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	448	699	54	69	1180	156	62	37	37	220	27	392
RTOR Reduction (vph)	0	7	0	0	14	0	0	0	29	0	0	29
Lane Group Flow (vph)	448	746	0	69	1322	0	0	99	8	0	247	363
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Prot	Perm	NA	pt+ov
Protected Phases	1	6		5	2			4	4		4	1 4
Permitted Phases	6			2			4			4		
Actuated Green, G (s)	46.7	37.4		35.0	29.7			17.1	17.1		17.1	35.0
Effective Green, g (s)	46.7	37.4		35.0	29.7			17.1	17.1		17.1	30.1
Actuated g/C Ratio	0.62	0.50		0.47	0.40			0.23	0.23		0.23	0.40
Clearance Time (s)	4.0	6.3		4.0	6.3			4.9	4.9		4.9	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	409	1763		398	1390			248	364		291	641
v/s Ratio Prot	c0.19	0.21		0.01	0.38				0.01			0.23
v/s Ratio Perm	c0.49			0.07				0.09			c0.19	
v/c Ratio	1.10	0.42		0.17	0.95			0.40	0.02		0.85	0.57
Uniform Delay, d1	21.6	11.9		11.1	21.9			24.6	22.5		27.7	17.4
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	72.7	0.7		0.2	15.0			1.1	0.0		20.0	1.2
Delay (s)	94.3	12.7		11.3	36.9			25.6	22.5		47.7	18.6
Level of Service	F	B		B	D			C	C		D	B
Approach Delay (s)		43.1			35.7			24.8			29.8	
Approach LOS		D			D			C			C	
Intersection Summary												
HCM 2000 Control Delay			36.8			HCM 2000 Level of Service				D		
HCM 2000 Volume to Capacity ratio			1.07									
Actuated Cycle Length (s)			75.0			Sum of lost time (s)			15.2			
Intersection Capacity Utilization			87.7%			ICU Level of Service			E			
Analysis Period (min)			15									
c Critical Lane Group												

	Major St. Approach	Major St. Approach	Total of Major St.	Minor St.	Warrant 1, Eight Hour	Warrant 1, Eight Hour	Warrant 1, Eight Hour	Warrant 1, Eight Hour	Warrant 2, Four Hour	Warrant 3, Peak Hour
(Major 1 Lane, Minor 2 or More Lanes)	Fog Plain Rd. EB	Chester St. WB		Clark Ln. NB	Condition A	Condition A 80%	Condition B	Condition B 80%		
Meet Warrant? (Yes/No)					No	No (Only 80% of A is met; 80% of B is not met.)	No	No	Yes	Yes
6:00 am-7:00 am	189	171	360	110						
7:00 am-8:00 am	120	349	469	321		Yes				
8:00 am-9:00 am	83	334	417	233		Yes				
9:00 am-10:00 am	96	394	490	308		Yes				
10:00 am-11:00 am	103	121	224	329						
11:00 am-12:00 pm	82	82	164	437						
12:00 pm-1:00 pm	59	337	396	133						
1:00 pm-2:00 pm	122	129	251	332						
2:00 pm-3:00 pm	115	472	587	424	Yes	Yes			Yes	
3:00 pm-4:00 pm	121	545	666	393	Yes	Yes		Yes	Yes	
4:00 pm-5:00 pm	120	593	713	448	Yes	Yes		Yes	Yes	Yes
5:00 pm-6:00 pm	72	492	564	394	Yes	Yes			Yes	
6:00 pm-7:00 pm	68	380	448	238		Yes				
7:00 pm-8:00 pm	31	235	266	202						

Standard:

- 04 The need for a traffic control signal shall be considered if an engineering study finds that one of the following conditions exist for each of any 8 hours of an average day:

- A. The vehicles per hour given in both of the 100 percent columns of Condition A in Table 4C-1 exist on the major-street and the higher-volume minor-street approaches, respectively, to the intersection; or
- B. The vehicles per hour given in both of the 100 percent columns of Condition B in Table 4C-1 exist on the major-street and the higher-volume minor-street approaches, respectively, to the intersection.

In applying each condition the major-street and minor-street volumes shall be for the same 8 hours. On the minor street, the higher volume shall not be required to be on the same approach during each of these 8 hours.

Option:

- 05 If the posted or statutory speed limit or the 85th-percentile speed on the major street exceeds 40 mph, or if the intersection lies within the built-up area of an isolated community having a population of less than 10,000, the traffic volumes in the 70 percent columns in Table 4C-1 may be used in place of the 100 percent columns.

Guidance:

- 06 The combination of Conditions A and B is intended for application at locations where Condition A is not satisfied and Condition B is not satisfied and should be applied only after an adequate trial of other alternatives that could cause less delay and inconvenience to traffic has failed to solve the traffic problems.

Standard:

- 07 The need for a traffic control signal shall be considered if an engineering study finds that both of the following conditions exist for each of any 8 hours of an average day:

- A. The vehicles per hour given in both of the 80 percent columns of Condition A in Table 4C-1 exist on the major-street and the higher-volume minor-street approaches, respectively, to the intersection; and
- B. The vehicles per hour given in both of the 80 percent columns of Condition B in Table 4C-1 exist on the major-street and the higher-volume minor-street approaches, respectively, to the intersection.

These major-street and minor-street volumes shall be for the same 8 hours for each condition; however, the 8 hours satisfied in Condition A shall not be required to be the same 8 hours satisfied in Condition B. On the minor street, the higher volume shall not be required to be on the same approach during each of the 8 hours.

Table 4C-1. Warrant 1, Eight-Hour Vehicular Volume

Condition A—Minimum Vehicular Volume

Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)				Vehicles per hour on higher-volume minor-street approach (one direction only)			
Major Street	Minor Street	100% ^a	80% ^b	70% ^c	56% ^d	100% ^a	80% ^b	70% ^c	56% ^d
1	1	500	400	350	280	150	120	105	84
2 or more	1	600	480	420	336	150	120	105	84
2 or more	2 or more	600	480	420	336	200	160	140	112
1	2 or more	500	400	350	280	200	160	140	112

Condition B—Interruption of Continuous Traffic

Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)				Vehicles per hour on higher-volume minor-street approach (one direction only)			
Major Street	Minor Street	100% ^a	80% ^b	70% ^c	56% ^d	100% ^a	80% ^b	70% ^c	56% ^d
1	1	750	600	525	420	75	60	53	42
2 or more	1	900	720	630	504	75	60	53	42
2 or more	2 or more	900	720	630	504	100	80	70	56
1	2 or more	750	600	525	420	100	80	70	56

^a Basic minimum hourly volume

^b Used for combination of Conditions A and B after adequate trial of other remedial measures

^c May be used when the major-street speed exceeds 40 mph or in an isolated community with a population of less than 10,000

^d May be used for combination of Conditions A and B after adequate trial of other remedial measures when the major-street speed exceeds 40 mph or in an isolated community with a population of less than 10,000

Option:

- 08 If the posted or statutory speed limit or the 85th-percentile speed on the major street exceeds 40 mph, or if the intersection lies within the built-up area of an isolated community having a population of less than 10,000, the traffic volumes in the 56 percent columns in Table 4C-1 may be used in place of the 80 percent columns.

Section 4C.03 Warrant 2, Four-Hour Vehicular Volume

Support:

- 01 The Four-Hour Vehicular Volume signal warrant conditions are intended to be applied where the volume of intersecting traffic is the principal reason to consider installing a traffic control signal.

Standard:

- 02 **The need for a traffic control signal shall be considered if an engineering study finds that, for each of any 4 hours of an average day, the plotted points representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour on the higher-volume minor-street approach (one direction only) all fall above the applicable curve in Figure 4C-1 for the existing combination of approach lanes. On the minor street, the higher volume shall not be required to be on the same approach during each of these 4 hours.**

Option:

- 03 If the posted or statutory speed limit or the 85th-percentile speed on the major street exceeds 40 mph, or if the intersection lies within the built-up area of an isolated community having a population of less than 10,000, Figure 4C-2 may be used in place of Figure 4C-1.

Section 4C.04 Warrant 3, Peak Hour

Support:

- 01 The Peak Hour signal warrant is intended for use at a location where traffic conditions are such that for a minimum of 1 hour of an average day, the minor-street traffic suffers undue delay when entering or crossing the major street.

Standard:

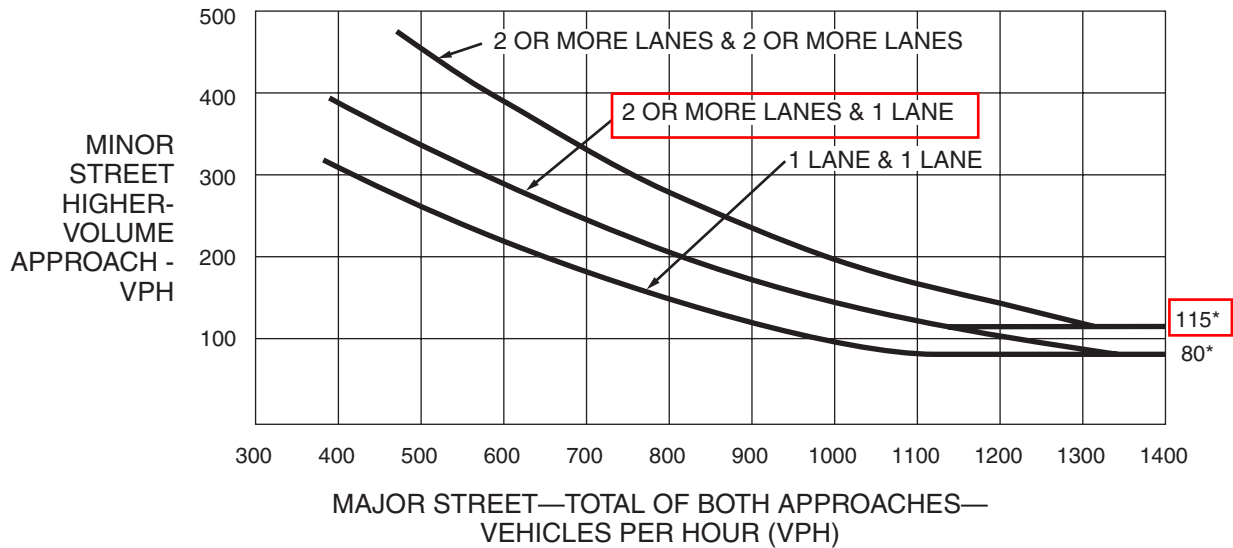
- 02 **This signal warrant shall be applied only in unusual cases, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time.**
- 03 **The need for a traffic control signal shall be considered if an engineering study finds that the criteria in either of the following two categories are met:**
- A. If all three of the following conditions exist for the same 1 hour (any four consecutive 15-minute periods) of an average day:**
 - 1. The total stopped time delay experienced by the traffic on one minor-street approach (one direction only) controlled by a STOP sign equals or exceeds: 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach; and**
 - 2. The volume on the same minor-street approach (one direction only) equals or exceeds 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour for two moving lanes; and**
 - 3. The total entering volume serviced during the hour equals or exceeds 650 vehicles per hour for intersections with three approaches or 800 vehicles per hour for intersections with four or more approaches.**
 - B. The plotted point representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour on the higher-volume minor-street approach (one direction only) for 1 hour (any four consecutive 15-minute periods) of an average day falls above the applicable curve in Figure 4C-3 for the existing combination of approach lanes.**

Option:

- 04 If the posted or statutory speed limit or the 85th-percentile speed on the major street exceeds 40 mph, or if the intersection lies within the built-up area of an isolated community having a population of less than 10,000, Figure 4C-4 may be used in place of Figure 4C-3 to evaluate the criteria in the second category of the Standard.
- 05 If this warrant is the only warrant met and a traffic control signal is justified by an engineering study, the traffic control signal may be operated in the flashing mode during the hours that the volume criteria of this warrant are not met.

Guidance:

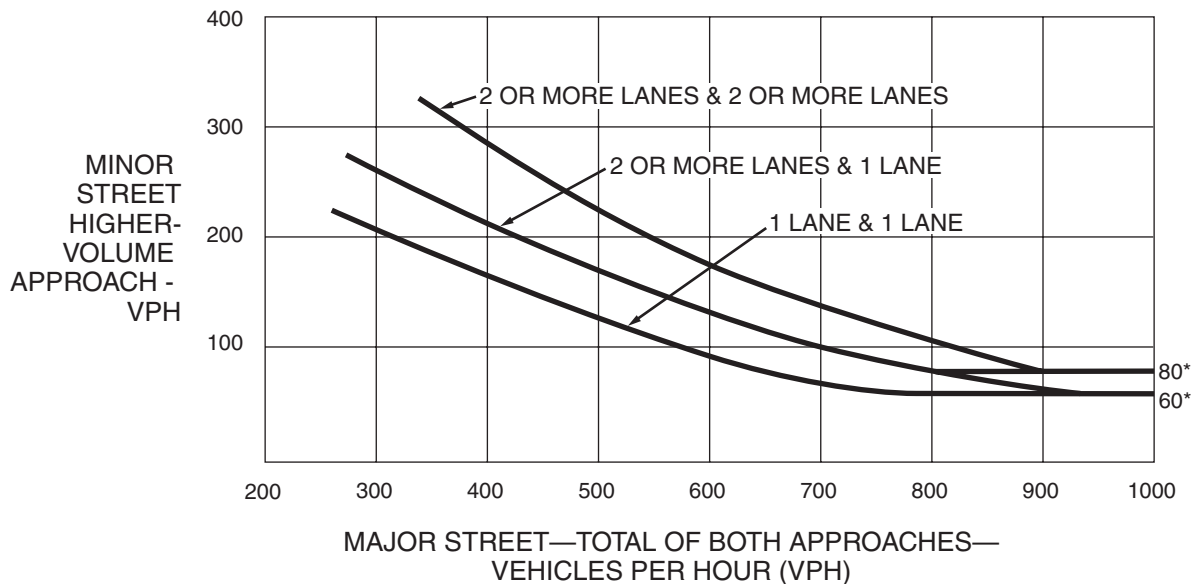
- 06 *If this warrant is the only warrant met and a traffic control signal is justified by an engineering study, the traffic control signal should be traffic-actuated.*

Figure 4C-1. Warrant 2, Four-Hour Vehicular Volume

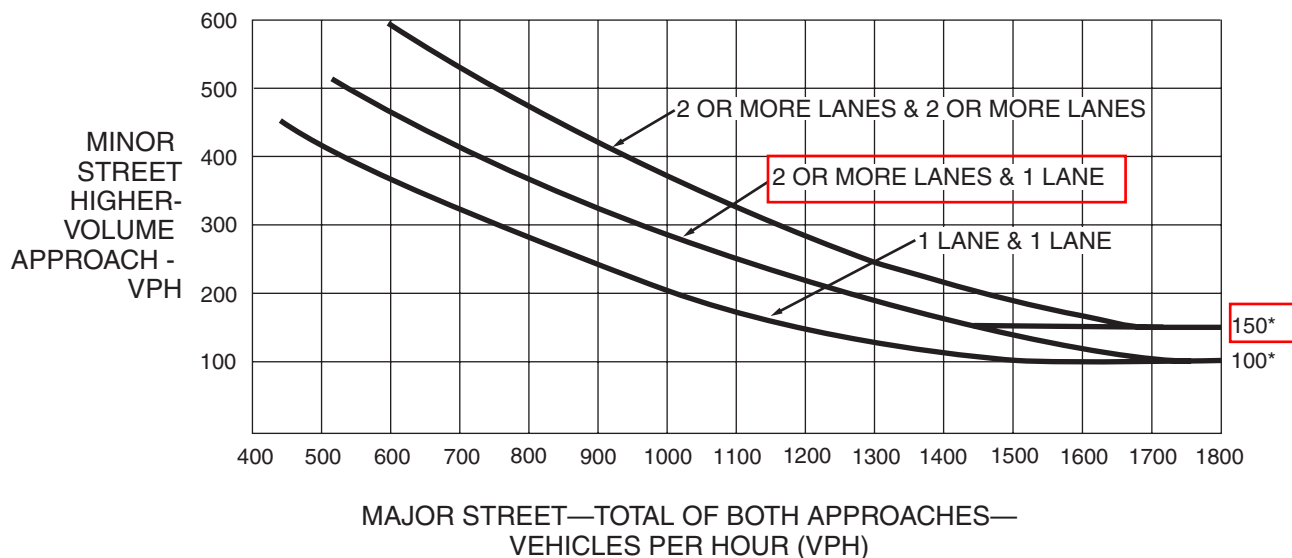
*Note: 115 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 80 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



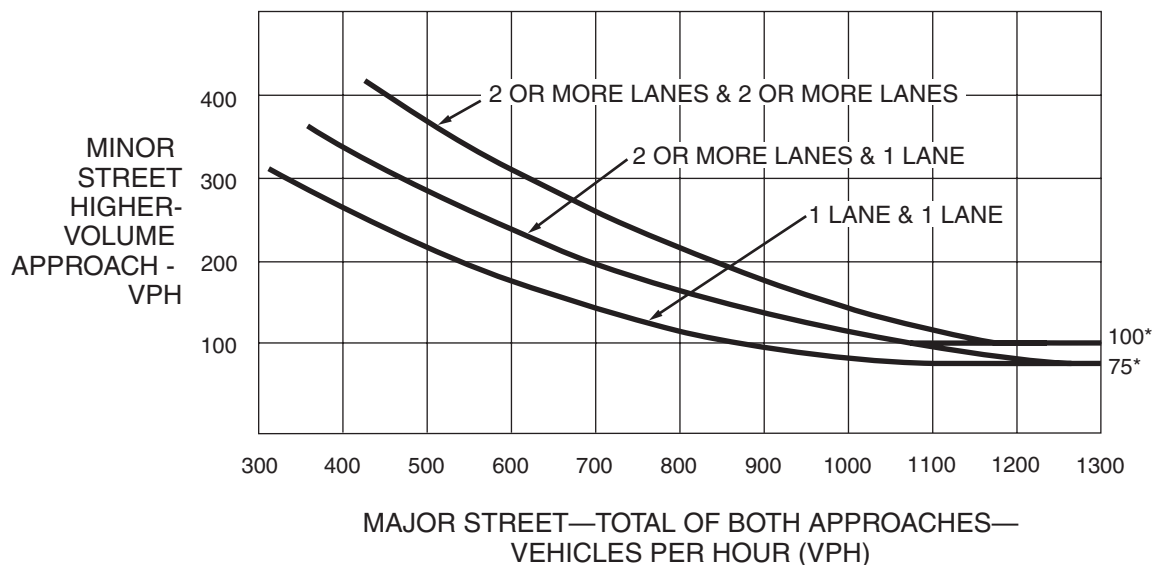
*Note: 80 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 60 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-3. Warrant 3, Peak Hour

*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

Connecticut Counts LLC
Kensington, Connecticut 06037
(860) 828-1693

Fog Plain Road West of Clark Lane
Waterford, Connecticut

Site Code:
Station ID: 5770

Latitude: 0° 0.0000 Undefined

Start Time	31-Oct-22		Tue		Wed		Thu		Fri		Sat		Sun	
	Eastbound	Westbound	Eastbound	Westbound	Eastbound	Westbound	Eastbound	Westbound	Eastbound	Westbound	Eastbound	Westbound	Eastbound	Westbound
12:00 AM	*	*	*	*	*	*	4	1	*	*	1	*	*	*
01:00	*	*	*	*	*	*	2	1	*	*	1	*	*	*
02:00	*	*	*	*	*	*	3	2	*	*	2	*	*	*
03:00	*	*	*	*	*	*	10	3	*	*	3	*	*	*
04:00	*	*	*	*	*	*	26	3	*	*	26	*	*	*
05:00	*	*	*	*	*	*	84	21	*	*	84	*	*	*
06:00	*	*	*	*	*	*	189	77	*	*	189	*	*	*
07:00	*	*	*	*	*	*	120	78	*	*	120	*	*	*
08:00	*	*	*	*	*	*	83	83	*	*	83	*	*	*
09:00	*	*	*	*	*	*	96	66	*	*	96	*	*	*
10:00	*	*	*	*	*	*	103	101	*	*	103	*	*	*
11:00	*	*	*	*	*	*	82	91	*	*	82	*	*	*
12:00 PM	*	*	59	60	122	131	*	*	*	*	59	60	*	*
01:00	*	*	115	149	122	149	*	*	*	*	122	131	*	*
02:00	*	*	121	172	115	149	*	*	*	*	115	149	*	*
03:00	*	*	120	144	121	172	*	*	*	*	121	172	*	*
04:00	*	*	72	121	120	144	*	*	*	*	120	144	*	*
05:00	*	*	68	74	72	121	*	*	*	*	72	121	*	*
06:00	*	*	31	56	68	74	*	*	*	*	68	74	*	*
07:00	*	*	17	28	31	56	*	*	*	*	31	56	*	*
08:00	*	*	11	20	17	28	*	*	*	*	17	28	*	*
09:00	*	*	6	20	11	20	*	*	*	*	11	20	*	*
10:00	*	*	3	6	6	20	*	*	*	*	6	20	*	*
11:00	*	*	1726	981	3	6	*	*	*	*	3	6	*	*
Total	0	0	0	0	745	981	802	527	0	0	1547	1508	0	0
Day	0	0	0	0	1726	1726	1329	1329	0	0	3055	3055	0	0
AM Peak Vol.	-	-	-	-	-	-	06:00	10:00	-	-	06:00	10:00	-	-
PM Peak Vol.	-	-	-	-	13:00	15:00	-	-	-	-	13:00	15:00	-	-
	-	-	-	-	122	172	-	-	-	-	122	172	-	-

Comb. Total	0	0	1726	1329	0	3055	0	0
ADT	ADT 3,092	AADT 3,092						

Connecticut Counts LLC
Kensington, Connecticut 06037
(860) 828-1693

Chester Street East of Clark Lane
Waterford, Connecticut

Site Code:
Station ID: 5771

Latitude: 0° 0.0000 Undefined

Start Time	31-Oct-22		Tue		Wed		Thu		Fri		Sat		Sun	
	Eastbound	Westbound	Eastbound	Westbound	Eastbound	Westbound	Eastbound	Westbound	Eastbound	Westbound	Eastbound	Westbound	Eastbound	Westbound
12:00 AM	*	*	*	*	*	*	10	27	*	*	*	*	*	*
01:00	*	*	*	*	*	*	8	9	*	*	*	*	*	*
02:00	*	*	*	*	*	*	4	6	*	*	*	*	*	*
03:00	*	*	*	*	*	*	11	10	*	*	*	*	*	*
04:00	*	*	*	*	*	*	26	17	*	*	*	*	*	*
05:00	*	*	*	*	*	*	92	41	*	*	*	*	*	*
06:00	*	*	*	*	*	*	190	171	*	*	*	*	*	*
07:00	*	*	*	*	*	*	392	349	*	*	*	*	*	*
08:00	*	*	*	*	*	*	330	334	*	*	*	*	*	*
09:00	*	*	*	*	*	*	359	394	*	*	*	*	*	*
10:00	*	*	*	*	*	*	408	121	*	*	*	*	*	*
11:00	*	*	*	*	*	*	403	82	*	*	*	*	*	*
12:00 PM	*	*	*	*	*	*	132	337	*	*	*	*	*	*
01:00	*	*	*	*	117	129	133	535	*	*	*	*	*	*
02:00	*	*	*	*	513	472	113	812	*	*	*	*	*	*
03:00	*	*	*	*	500	545	72	620	*	*	*	*	*	*
04:00	*	*	*	*	525	593	*	*	*	*	*	*	*	*
05:00	*	*	*	*	454	492	*	*	*	*	*	*	*	*
06:00	*	*	*	*	331	380	*	*	*	*	*	*	*	*
07:00	*	*	*	*	220	235	*	*	*	*	*	*	*	*
08:00	*	*	*	*	139	161	*	*	*	*	*	*	*	*
09:00	*	*	*	*	102	109	*	*	*	*	*	*	*	*
10:00	*	*	*	*	50	70	*	*	*	*	*	*	*	*
11:00	*	*	*	*	33	45	*	*	*	*	*	*	*	*
Total	0	0	0	0	2984	3231	2683	3865	0	0	4943	5539	0	0
Day	0	0	0	0	6215	6548	6548	3865	0	0	10482	5539	0	0
AM Peak Vol.	-	-	-	-	-	-	10:00	09:00	-	-	10:00	09:00	-	-
PM Peak Vol.	-	-	-	-	16:00	16:00	13:00	14:00	-	-	16:00	14:00	-	-
	-	-	-	-	525	593	133	812	-	-	525	642	-	-

Comb. Total	0	0	6215	6548	0	10482	0	0
ADT	ADT 10,602	AADT 10,602						

Connecticut Counts LLC
Kensington, Connecticut 06037
(860) 828-1693

Clark Lane South of Fog Plain Road
Waterford, Connecticut

Site Code:
Station ID: 5778

Latitude: 0° 0.0000 Undefined

Start Time	19-Dec-22		Tue		Wed		Thu		Fri		Weekday Average		Sat		Sun	
	Northbound	Southbound	Northbound	Southbound	Northbound	Southbound	Northbound	Southbound	Northbound	Southbound	Northbound	Southbound	Northbound	Southbound	Northbound	Southbound
12:00 AM	*	*	*	*	*	*	8	14	10	26	9	20	12	17	15	9
01:00	*	*	*	*	*	*	5	10	6	10	6	10	9	13	9	11
02:00	*	*	*	*	*	*	9	7	8	5	8	6	9	4	6	4
03:00	*	*	*	*	*	*	9	7	10	9	10	8	9	5	6	5
04:00	*	*	*	*	*	*	12	14	13	6	12	10	7	12	5	5
05:00	*	*	*	*	*	*	60	42	36	56	48	49	13	22	5	9
06:00	*	*	*	*	*	*	110	129	74	134	92	132	27	64	22	36
07:00	*	*	*	*	*	*	321	378	245	354	283	366	69	93	39	38
08:00	*	*	*	*	*	*	233	297	168	279	200	288	120	145	45	53
09:00	*	*	*	*	*	*	308	367	284	331	296	349	228	225	74	83
10:00	*	*	*	*	*	*	329	314	329	323	329	318	314	326	96	89
11:00	*	*	*	*	*	*	437	440	490	456	464	448	349	342	132	146
12:00 PM	*	*	*	*	133	127	400	402	438	426	324	318	369	375	137	157
01:00	*	*	332	298	332	298	415	446	456	463	401	402	308	344	120	137
02:00	*	*	424	349	424	349	438	473	383	425	415	416	294	294	152	138
03:00	*	*	393	428	393	428	436	473	403	428	411	443	281	292	126	109
04:00	*	*	448	451	448	451	481	493	359	378	429	441	272	268	113	127
05:00	*	*	394	422	394	422	342	409	288	294	341	375	226	221	109	117
06:00	*	*	238	290	238	290	244	324	188	210	223	275	117	147	97	93
07:00	*	*	202	191	202	191	201	218	150	155	184	188	116	124	64	86
08:00	*	*	149	151	149	151	134	163	128	116	137	143	83	86	63	64
09:00	*	*	107	113	107	113	95	103	60	81	87	99	88	77	40	43
10:00	*	*	60	55	60	55	54	66	43	67	52	63	59	70	34	36
11:00	*	*	28	46	28	46	39	43	31	32	33	40	31	44	26	30
Total Day	0	0	0	0	2908	2921	5120	5632	4600	5064	4794	5207	3410	3610	1535	1625
AM Peak Vol.	-	-	-	-	5829	5829	10752	110752	9664	9664	10001	11000	7020	1100	3160	1100
PM Peak Vol.	-	-	-	-	448	451	481	493	456	463	429	443	369	375	152	157