TEPP LLC TRANSPORTATION ENGINEERING, PLANNING AND POLICY

93 Stiles Road, Suite 201, Salem, New Hampshire 03079 USA
800 Turnpike Street, Suite 300, North Andover, Massachusetts 01845 USA
Phone (603) 212-9133 and Fax (603) 226-4108
Email tepp@teppllc.com and Web www.teppllc.com

MEMORANDUM

Ref: 1406

Subject: Traffic Assessment
Residential Development
Newbury, Massachusetts

From: Kim Eric Hazarvartian, Ph.D., P.E., PTOE
Principal

Date: Revised October 29, 2017

INTRODUCTION

Ranger Engineering and Design, LLC has retained TEPP LLC to prepare this revised traffic-assessment memorandum (TAM) regarding a proposed residential development in the Town of Newbury, Massachusetts. This revised TAM responds to peer-review comments, in the June 23, 2017 memorandum by WSP USA, regarding the October 20, 2016 TAM by TEPP LLC.

This TAM concludes that:

- available sight distances are adequate for the Orchard Street/Pearson Drive intersection
- available sight distances are adequate for the Pearson Drive/proposed driveway intersection
- trip-generation calculations indicate no significant overall traffic impact for the area
- the proposed driveway and Pearson Drive will provide safe and adequate access for the proposed development
- the Orchard Street/Pearson Drive intersection shows low delays

PROPOSED DEVELOPMENT

The proposed development will provide 24 dwelling units of detached residential condominium. A driveway will intersect the north side of Pearson Drive just west of 57 Pearson Drive.

PHYSICAL CONDITIONS

The Orchard Street/Pearson Drive intersection:

- is under the jurisdiction of the Town of Newbury
- has a three-legged configuration
- has Orchard Street as the major north-south street and Pearson Drive as the minor west leg
- has one-lane street approaches and departures
- has no channelization on Orchard Street
- has a landscaped median on Pearson Drive
- has the Pearson Drive approach operating as if under STOP-sign control, although no STOP sign exists
- has a marked crosswalk on the Lakeview Avenue west leg
- is not illuminated
- has nearby residential land uses

TRAFFIC VOLUMES

TEPP LLC obtained turning movement counts (TMCs):

- at the Orchard Street/Pearson Drive intersection
- on Thursday, October 12, 2017 from 7:00 AM to 9:00 AM
- on Thursday, October 12, 2017 from 4:00 PM to 6:00 PM

The traffic-count data are attached.

The October traffic counts were used without adjustment because October volumes are greater than average month. Massachusetts Department of Transportation (MassDOT) monthly factors are attached.

Figure 1 shows 2017 existing traffic volumes.

SIGHT DISTANCES

This TAM presents sight distances for the following intersections:

- Orchard Street/Pearson Drive
- Pearson Drive/proposed driveway

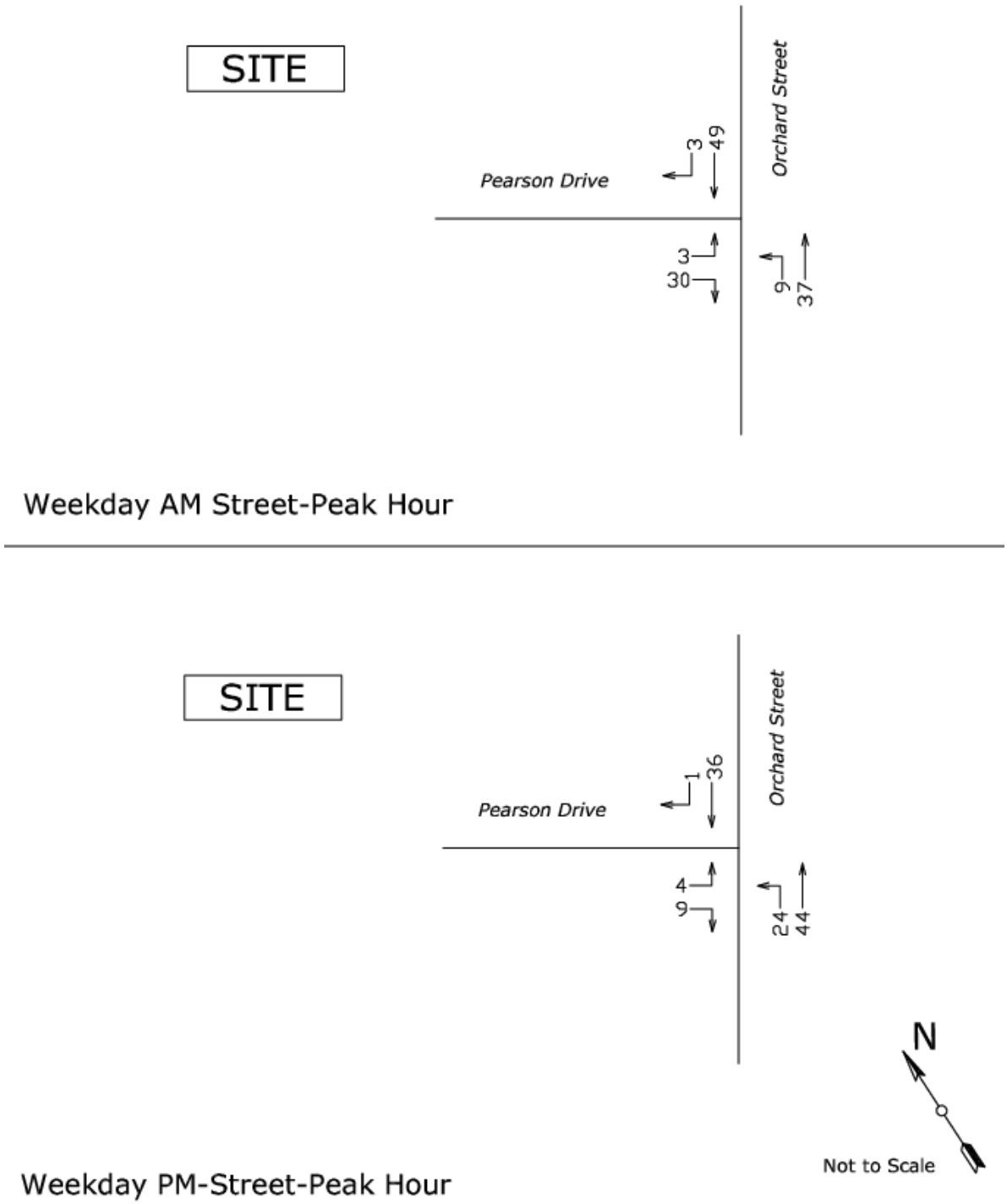


Figure 1. 2017 existing traffic volumes.

The American Association of State Highway and Transportation Officials (AASHTO) has established authoritative policy for sight distances at unsignalized intersections in terms of:

- stopping sight distance (SSD)
- optional intersection sight distance (ISD)[1]

SSD:

- provides for safety
- enables a driver, on the major road, to perceive and react accordingly to a vehicle entering the major road from a minor road
- is conservative because it encompasses a wide range of brake-reaction times and deceleration rates[2]

Optional ISD:

- is ordinarily greater than SSD and may enhance traffic operations
- is not required for safety

Table 1 shows relevant available sight distances that are adequate.

Table 1. Sight distances.

Intersection and View	Available Sight Distance (ft)[a]	Statutory Speed Limit (mph)	Provides for Speed (mph)	
			SSD	Optional ISD
Orchard Street/Pearson Drive				
Orchard Street to/from North	700	30 to 40	50+	50+
Orchard Street to/from South	690	30 to 40	50+	50+
Pearson Drive/Proposed Driveway				
Pearson Drive to/from South	490	30	40+	40+
Pearson Drive to/from South	265	30	36+	24

[a] With appropriate roadside and vegetation maintenance.

[1] AASHTO, *A Policy on Geometric Design of Highways and Streets*, 6th Edition (Washington, DC, 2011), pages 9-28 to 9-29.

[2] AASHTO, pages 3-2 to 3-6.

ACCIDENT HISTORY

TEPP LLC reviewed accident records from MassDOT for:

- the Orchard Street/Pearson Drive intersection
- the most recent five years available, 2010 through 2014

The records did not indicate an accident.

TRIP GENERATION

The Institute of Transportation Engineers (ITE) publishes trip-generation information in the authoritative reference *Trip Generation Manual*.[3] This information is based on empirical data for a variety of land uses including single-family detached housing, land use 210, based on number of dwelling units.[4]

Table 2 shows calculated vehicle-trip generation for the site as:

Table 2. Calculated vehicle-trips.

	Vehicle-Trips[a]		
	Total	In	Out
Weekday			
Daily	283	141	142
AM Street-Peak Hour	27	7	20
PM Street-Peak Hour	29	18	11
Saturday			
Daily	269	143	135
Site-Peak Hour	30	16	14

[a] Based on ITE, *Trip Generation Manual*, 9th edition, single-family detached housing, land use 210, 24 dwelling units.

- weekday daily, 283 (total of in and out)
- weekday AM street-peak hour, 27 (7 in and 20 out)

[3] ITE, *Trip Generation Manual*, 9th edition (Washington DC, 2012).

[4] ITE, *Trip Generation Manual,* pages 295 to 331.

- weekday PM street-peak hour, 29 (18 in and 11 out)
- Saturday daily, 269 (total of in and out)
- Saturday site-peak hour, 30 (16 in and 15 out)

POTENTIAL TRAFFIC IMPACTS

ITE suggests that land developments generating at least 100 peak-hour vehicle-trips, in the busier direction, are candidates for consideration of traffic-impact analysis.[5] The calculations show less than 100 peak-hour vehicle-trips, in the busier direction, due to the proposed development.

During the tabulated peak hours, vehicle-trips are:

- 27 to 30 vehicle-trips
- split entering versus exiting the site
- further split by orientation to/from the north, south, east or west

Therefore, no significant overall traffic impact is anticipated for the area.

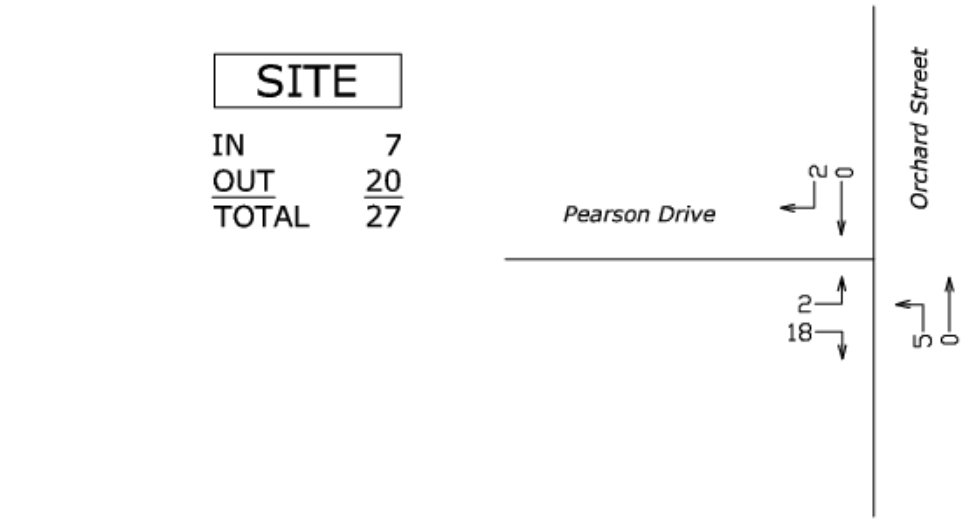
TRIP DISTRIBUTION AND NETWORK ASSIGNMENT

Trip distribution and network assignment of vehicle trips to and from the site may consider such factors as existing site distribution, travel patterns, population, regional land development, and site accessibility. In this case, trip distribution and network assignment reflect existing turning movements at the Orchard Street/Pearson Drive intersection. Figure 2 shows site-traffic volumes.

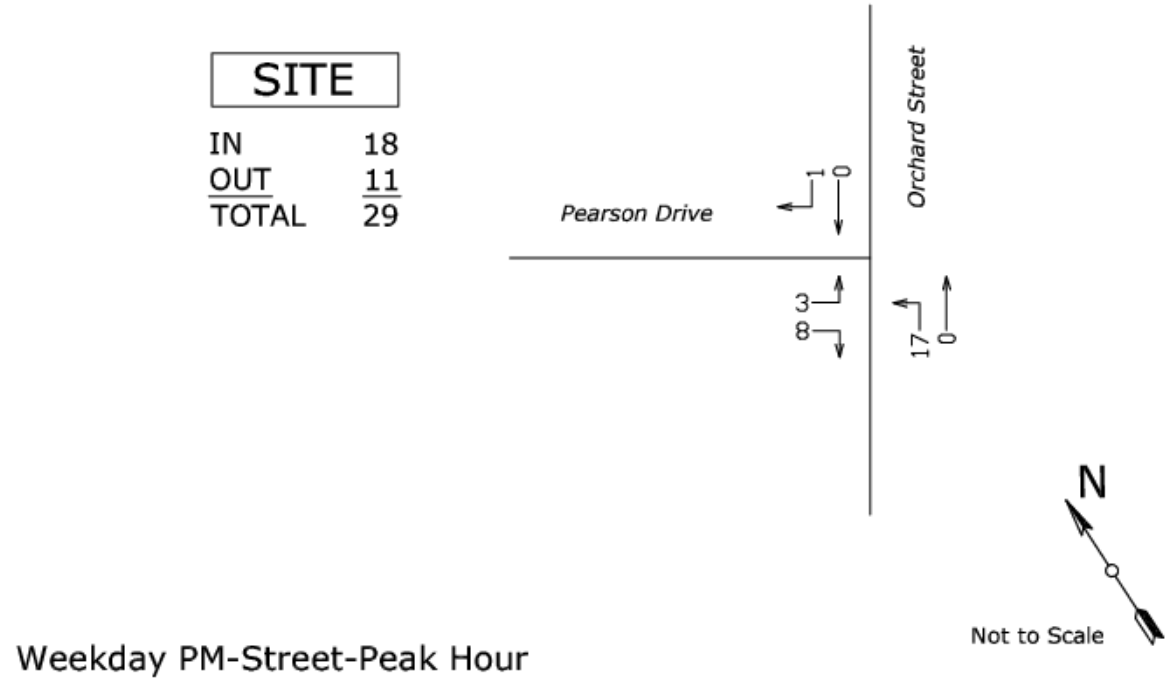
BUILD TRAFFIC VOLUMES

Site traffic volumes were superimposed on the existing traffic volumes to estimate build traffic volumes. Figure 3 shows the resulting 2017 build traffic volumes.

[5] ITE, *Manual of Transportation Engineering Studies* (Prentice Hall: Englewood Cliffs, New Jersey, 2000), page 144.

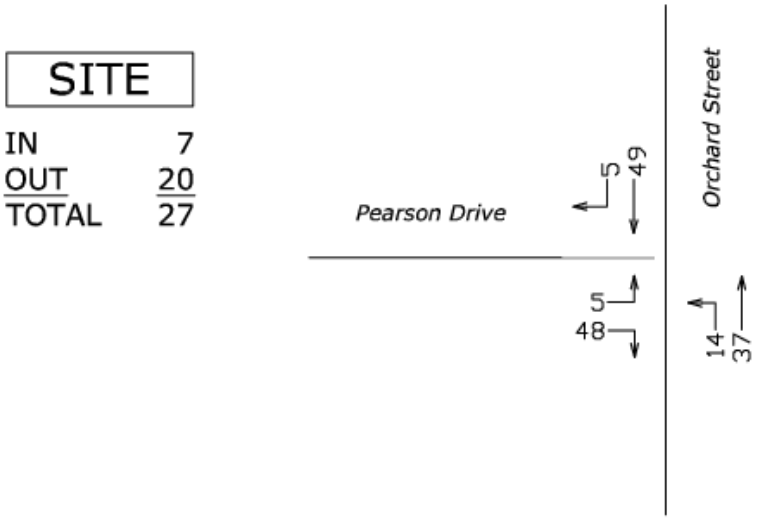


Weekday AM Street-Peak Hour

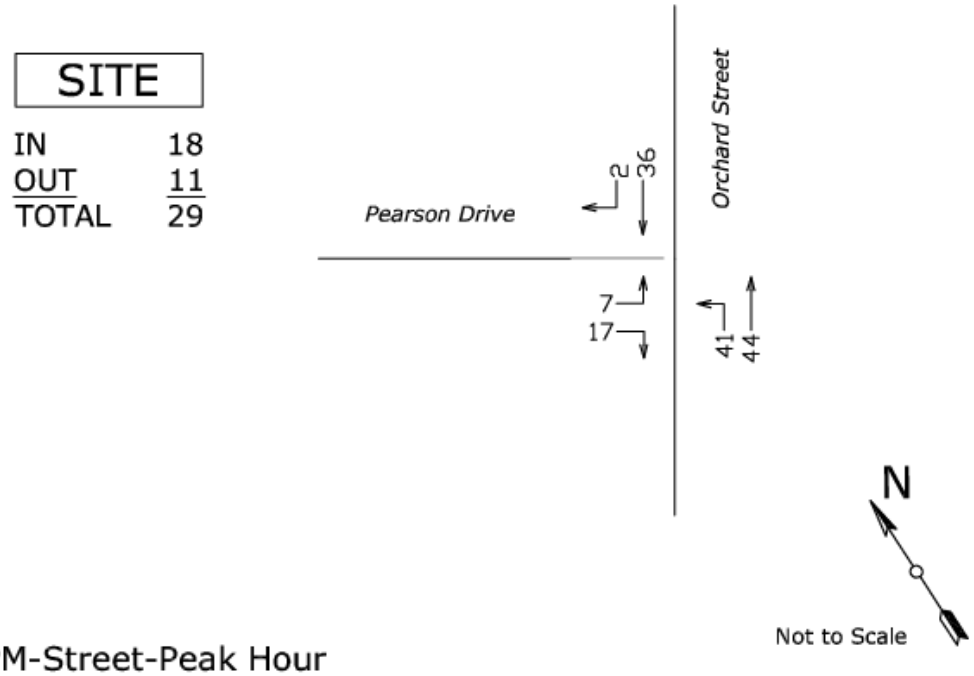


Weekday PM-Street-Peak Hour

Figure 2. Site-traffic volumes.



Weekday AM Street-Peak Hour



Weekday PM-Street-Peak Hour

Figure 3. 2017 build traffic volumes.

CAPACITY ANALIYIS

INTRODUCTION

This TIAS has quantified existing, future-no-build and future-build traffic volumes. Capacity analysis models the quality of traffic operations. Comparing build conditions to the no-build conditions indicates impacts of the proposed development on quality of traffic operations.

METHODS

Capacity analysis calculates LOS for transportation facilities. LOS indicates the quality of traffic operations based on delay and other measures. The six LOS are designated A to F. LOS A represents the best or highest operating conditions. LOS F is the lowest, but does not necessarily connote failure.

LOS is a function of traffic volumes and traffic control. Because these volumes can vary, LOS of a transportation facility can differ by time of day, day of the week, or month. For example, a transportation facility with a low LOS during peak hours may have a high LOS during other hours. The operational analysis methods of the Transportation Research Board (TRB)[6] models LOS for intersections based on calculated delay per vehicle, as shown in Table 3. Synchro 8 analysis software was used.

Method inputs include:

- intersection geometry
- traffic control, such as YIELD sign, two-way STOP sign, all-way STOP sign, roundabout or signal (including phasing, timing and progression)
- traffic volumes
- vehicle composition, such as passenger cars and trucks

The methods are all approximate. In particular, the method for two-way STOP-sign control can be conservative, with observed delays and queuing shorter than those modeled.

[6] TRB, *Highway Capacity Manual 2000* (Washington DC 2000) and *Highway Capacity Manual 2010* (Washington DC, 2010).

Table 3 Level-of-service criteria for intersections.

	Control Delay (seconds/vehicle)	
Level of Service	Unsignalized Intersections[a]	Signalized Intersections
A	≤10.0	≤10.0
B	>10.0 and ≤15.0	>10.0 and ≤20.0
C	>15.0 and ≤25.0	>20.0 and ≤35.0
D	>25.0 and ≤35.0	>35.0 and ≤55.0
E	>35.0 and ≤50.0	>55.0 and ≤80.0
F	>50	>80

From TRB, *Highway Capacity Manual 2010* (Washington DC, 2010).

[a] For YIELD sign, two-way STOP sign or all-way STOP sign, control delay defines LOS. For roundabout approaches and overall intersection, control delay defines LOS. For roundabout lanes with volume/capacity ratio ≤1.0, control delay defines LOS. For roundabout lanes with volume/capacity ratio > 1.0, LOS is F regardless of control delay.

RESULTS

Table 4 show computed LOS, delays and queues at study-area intersections for the weekday AM street-peak hour and the weekday PM street-peak-hour under the 2017 existing and 2017 build conditions.

Capacity-analysis worksheets that give detail and explanation are attached.

The Orchard Street/Pearson Drive unsignalized intersection, without or with the project, shows low delays.

Table 4. Capacity-analysis summary.

Intersection, Condition and Hour	2024 No Build				2024 Build			
	LOS[a]	Delay[b]	V/C[c]	Queue[d]	LOS	Delay	V/C	Queue
Orchard Street/Pearson Drive Unsignalized Intersection, Weekday AM-Street-Peak Hour								
Orchord Street NB L	A	7.4	0.007	0.0	A	7.5	0.012	0.0
Pearson Drive EB LR	A	8.9	0.057	0.2	A	9.1	0.092	0.3
Orchard Street/Pearson Drive Unsignalized Intersection, Weekday PM-Street-Peak Hour								
Orchord Street NB L	A	7.5	0.019	0.1	A	7.5	0.033	0.1
Pearson Drive EB LR	A	9.1	0.023	0.1	A	9.3	0.044	0.1

[a] LOS = level of service.

[b] Delay = average delay in seconds per vehicle.

[c] V/C = volume/capacity ratio.

[d] 95th percentile queue in vehicles.

EB = eastbound, WB = westbound, SB = southbound, NB = northbound, L = left, T = through, R = right.

CONCLUSION

This TAM concludes that:

- available sight distances are adequate for the Orchard Street/Pearson Drive intersection
- available sight distances are adequate for the Pearson Drive/proposed driveway intersection
- trip-generation calculations indicate no significant overall traffic impact for the area
- the proposed driveway and Pearson Drive will provide safe and adequate access for the proposed development
- the Orchard Street/Pearson Drive intersection shows low delays

attachments

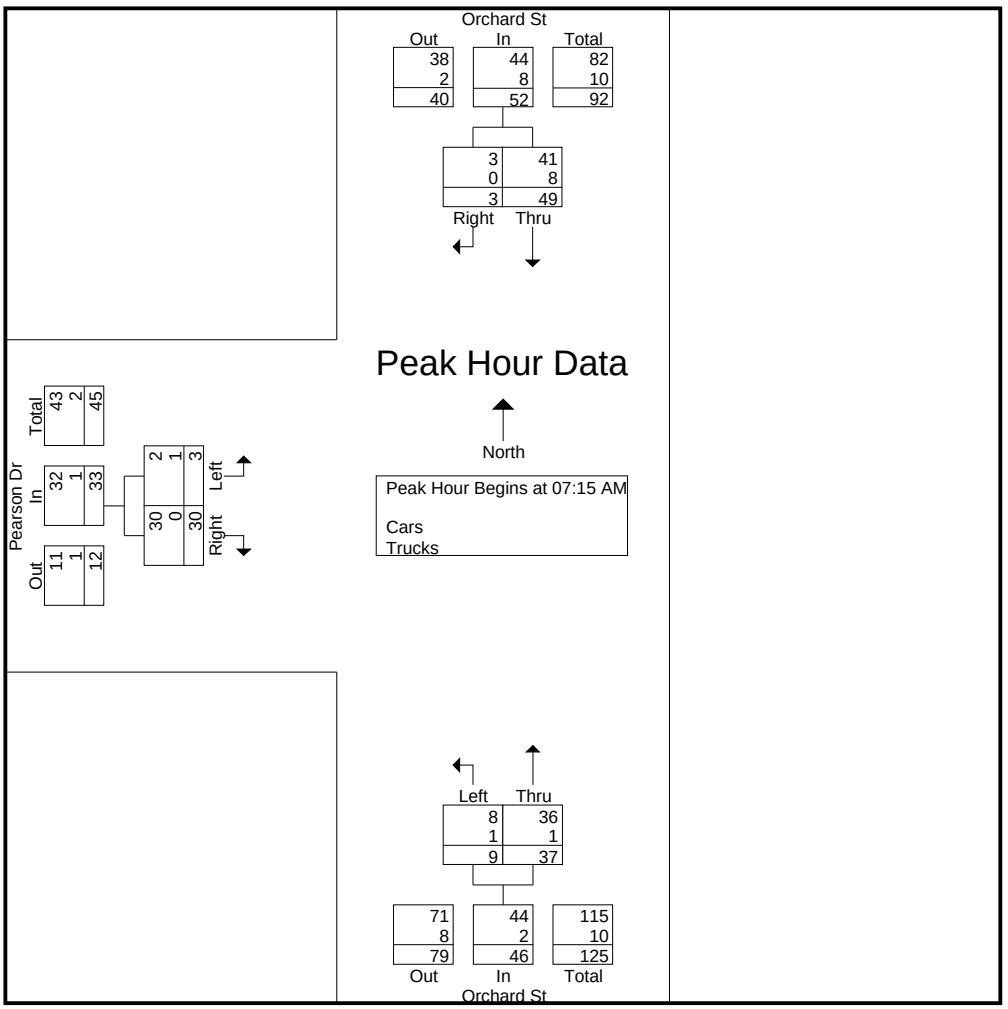
Accurate Counts

978-664-2565

N/S Street : Orchard Street
E/W Street : Pearson Drive
City/State : Newbury, MA
Weather : Clear

File Name : 14060001
Site Code : 14060001
Start Date : 10/12/2017
Page No : 2

	Orchard St From North			Orchard St From South			Pearson Dr From West			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:15 AM										
07:15 AM	11	**2**	13	2	7	9	0	8	8	30
07:30 AM	**16**	0	**16**	**3**	11	**14**	**2**	**12**	**14**	**44**
07:45 AM	9	0	9	2	7	9	1	6	7	25
08:00 AM	13	1	14	2	**12**	14	0	4	4	32
Total Volume	49	3	52	9	37	46	3	30	33	131
% App. Total	94.2	5.8		19.6	80.4		9.1	90.9		
PHF	.766	.375	.813	.750	.771	.821	.375	.625	.589	.744
Cars	41	3	44	8	36	44	2	30	32	120
% Cars	83.7	100	84.6	88.9	97.3	95.7	66.7	100	97.0	91.6
Trucks	8	0	8	1	1	2	1	0	1	11
% Trucks	16.3	0	15.4	11.1	2.7	4.3	33.3	0	3.0	8.4



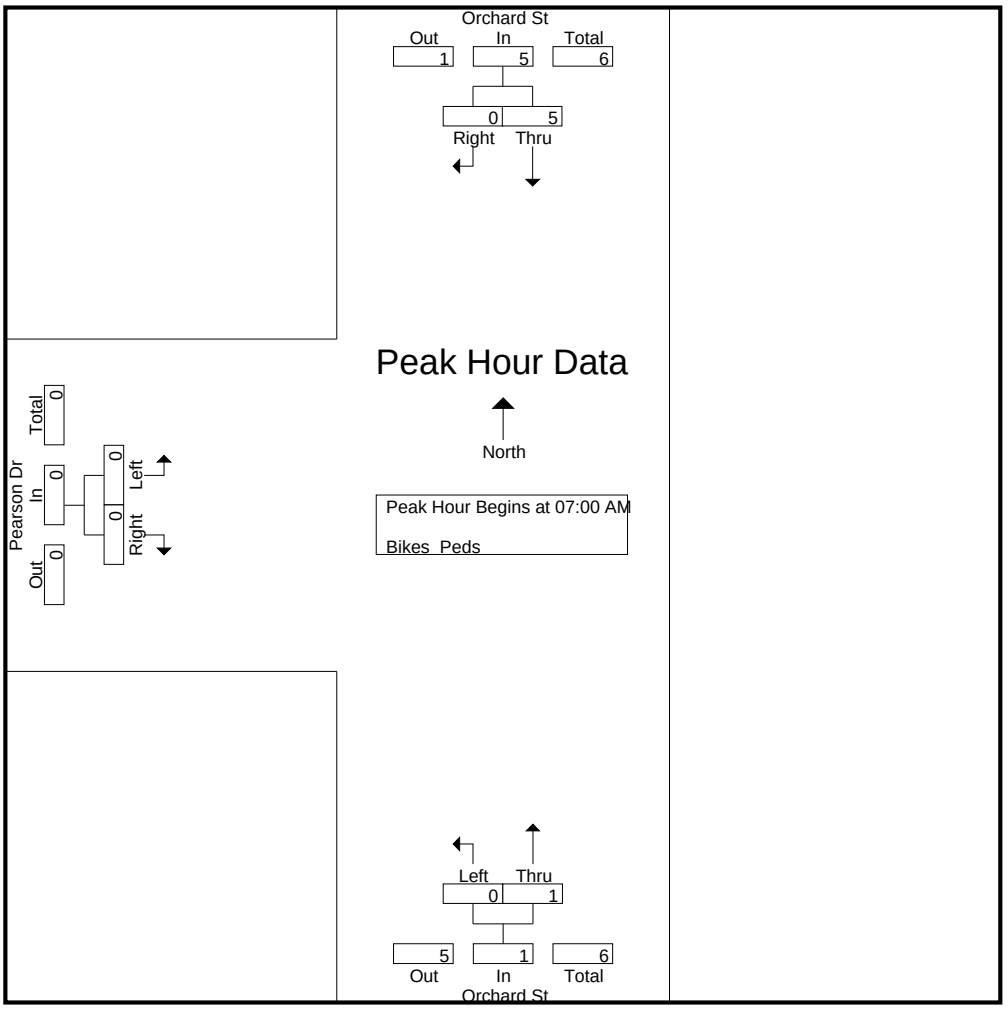
Accurate Counts

978-664-2565

N/S Street : Orchard Street
E/W Street : Pearson Drive
City/State : Newbury, MA
Weather : Clear

File Name : 14060001
Site Code : 14060001
Start Date : 10/12/2017
Page No : 11

	Orchard St From North			Orchard St From South			Pearson Dr From West			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:00 AM										
07:00 AM	**4**	0	**4**	0	0	0	0	0	0	**4**
07:15 AM	0	0	0	0	0	0	0	0	0	0
07:30 AM	1	0	1	0	**1**	**1**	0	0	0	2
07:45 AM	0	0	0	0	0	0	0	0	0	0
Total Volume	5	0	5	0	1	1	0	0	0	6
% App. Total	100	0		0	100		0	0		
PHF	.313	.000	.313	.000	.250	.250	.000	.000	.000	.375



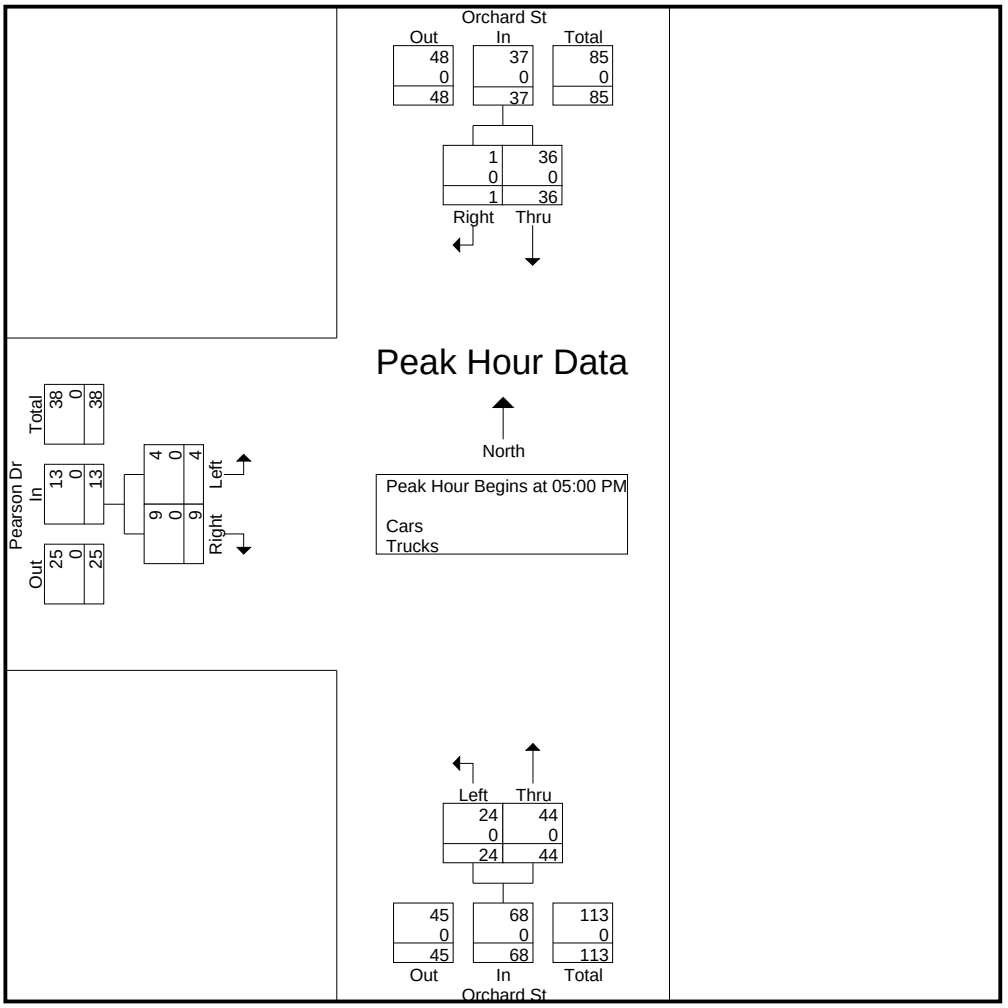
Accurate Counts

978-664-2565

N/S Street : Orchard Street
E/W Street : Pearson Drive
City/State : Newbury, MA
Weather : Clear

File Name : 14060001
Site Code : 14060001
Start Date : 10/12/2017
Page No : 2

	Orchard St From North			Orchard St From South			Pearson Dr From West			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 05:00 PM										
05:00 PM	**12**	0	**12**	6	9	15	**3**	**3**	**6**	**33**
05:15 PM	6	**1**	7	7	11	18	0	2	2	27
05:30 PM	8	0	8	**8**	**12**	**20**	0	2	2	30
05:45 PM	10	0	10	3	12	15	1	2	3	28
Total Volume	36	1	37	24	44	68	4	9	13	118
% App. Total	97.3	2.7		35.3	64.7		30.8	69.2		
PHF	.750	.250	.771	.750	.917	.850	.333	.750	.542	.894
Cars	36	1	37	24	44	68	4	9	13	118
% Cars	100	100	100	100	100	100	100	100	100	100
Trucks	0	0	0	0	0	0	0	0	0	0
% Trucks	0	0	0	0	0	0	0	0	0	0



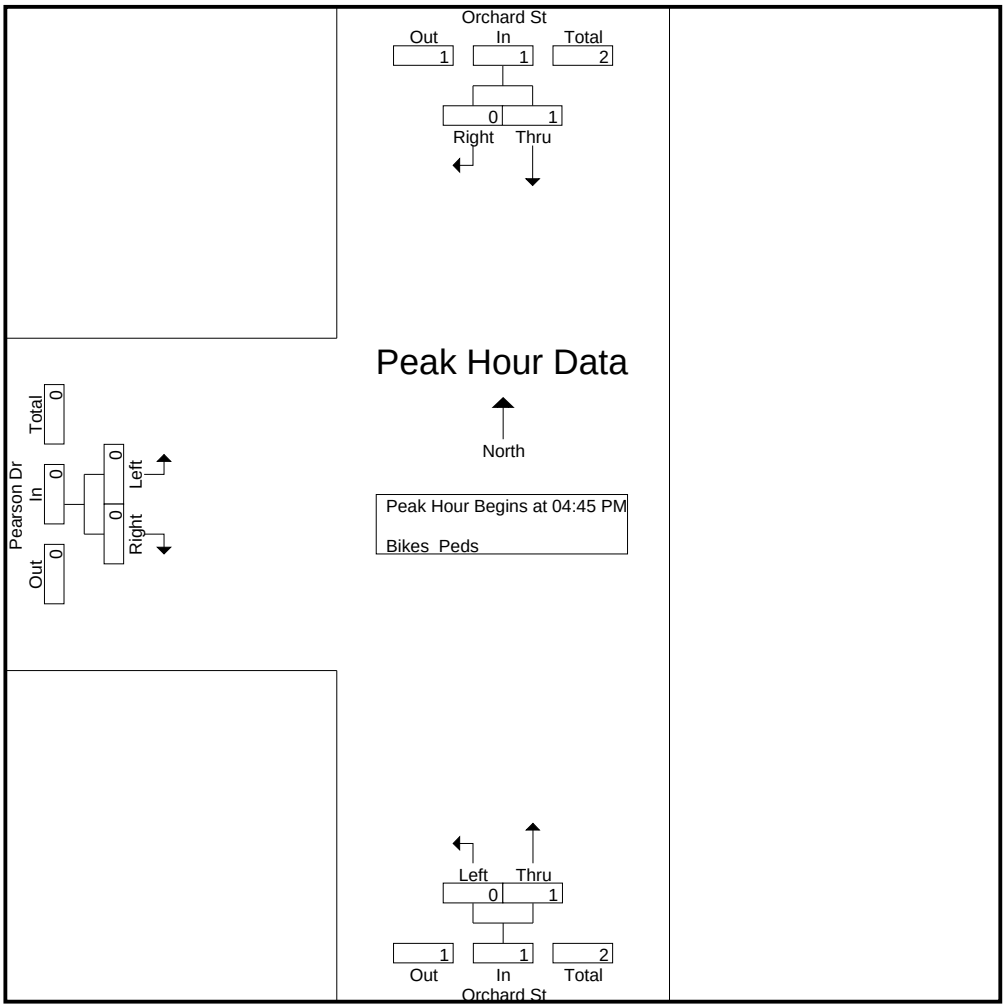
Accurate Counts

978-664-2565

N/S Street : Orchard Street
E/W Street : Pearson Drive
City/State : Newbury, MA
Weather : Clear

File Name : 14060001
Site Code : 14060001
Start Date : 10/12/2017
Page No : 11

	Orchard St From North			Orchard St From South			Pearson Dr From West			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:45 PM										
04:45 PM	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0
05:30 PM	**1**	0	**1**	0	**1**	**1**	0	0	0	**2**
Total Volume	1	0	1	0	1	1	0	0	0	2
% App. Total	100	0		0	100		0	0		
PHF	.250	.000	.250	.000	.250	.250	.000	.000	.000	.250



MASSACHUSETTS HIGHWAY DEPARTMENT - STATEWIDE TRAFFIC DATA COLLECTION

2010 WEEKDAY SEASONAL FACTORS *

* Note: These are weekday factors. The average of the factors for the year will not equal 1, as weekend data are not considered.

FACTOR GROUP	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
GROUP **1** - WEST INTERSTATE	0.97	0.93	0.89	0.88	0.89	0.87	0.91	0.89	0.89	0.90	0.93	0.95
Use group 2 for R5, R6, & R0 GROUP **2** - **RURAL MAJOR COLLECTOR (R-5)**	1.11	1.10	1.07	1.00	0.91	0.89	0.87	0.86	0.90	0.92	1.02	1.06
GROUP **3A** - RECREATIONAL **(1-4) See below	1.26	1.25	1.19	1.08	0.95	0.88	0.77	0.76	0.93	1.00	1.08	1.15
GROUP **3B** - RECREATIONAL ***(5) See below	1.25	1.23	1.16	1.10	0.96	0.90	0.75	0.73	0.93	0.99	1.13	1.16
GROUP **4** - I-495 INTERSTATE	1.02	0.99	0.98	0.95	0.92	0.88	0.86	0.84	0.93	0.95	0.99	1.03
GROUP **5** - EAST INTERSTATE	1.04	1.00	0.97	0.93	0.92	0.91	0.92	0.89	0.92	0.93	0.97	1.01
GROUP **6**: Use group 6 for U2, U3, U5, U6, U0, R2, & R3 **URBAN ARTERIALS, COLLECTORS & RURAL ARTERIALS (R-2, R-3)**	1.01	1.00	0.96	0.93	0.91	0.90	0.91	0.90	0.92	0.93	0.97	0.99
GROUP **7** - I-84 PROXIMITY (STA. 17, 3921)	1.21	1.20	1.11	1.06	1.00	1.01	0.95	0.90	1.06	1.06	1.06	1.14
GROUP **8** - I-295 PROXIMITY (STA. 6590)	1.00	0.99	0.95	0.92	0.88	0.87	0.92	0.88	0.91	0.91	0.92	0.94
GROUP **9** - I-195 PROXIMITY (STA. 7)	1.10	1.05	1.03	0.96	0.90	0.86	0.85	0.79	0.88	0.93	0.99	1.04

RECREATIONAL: (ALL YEARS)

****GROUP 3A:**

1. CAPE COD (ALL TOWNS)

2.PLYMOUTH(SOUTH OF RTE.3A)

7014, 7079,7080,7090,7091,7092,7093,7094,7095,7096,7097,7108,7178

3.MARTHA'S VINEYARD

4.NANTUCKET

*****GROUP 3B:**

5.PERMANENTS 2 & 189

1066,1067,1083,1084,1085,1086,1087,1088,1089,1090,1091,1092,

1093,1094,1095,1096,1097,1098,1099,1100,1101,1102,1103,1104,

1105,1106,1107,1108,1113,1114,1116,2196,2197,2198

2010 AXLE CORRECTION FACTORS

ROAD INVENTORY FUNCTIONAL CLASSIFICATION	AXLE CORRECTION FACTOR
RURAL	
1	0.93
2	0.97
3	0.98
0,5,6	0.98
URBAN	
1	0.96
2,3	0.97
5	0.98
0,6	0.98
I-84	0.78

ROUND OFF

0 - 999.....10

> 1,000.....100

Apply I-84 factor to stations:

3290, 3921, 3929

Intersection	
Int Delay, s/veh	3.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	3	30	9	37	49	3
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	59	59	82	82	81	81
Heavy Vehicles, %	33	0	11	3	16	0
Mvmt Flow	5	51	11	45	60	4

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	129	62	64	0	-	0
Stage 1	62	-	-	-	-	-
Stage 2	67	-	-	-	-	-
Critical Hdwy	6.73	6.2	4.21	-	-	-
Critical Hdwy Stg 1	5.73	-	-	-	-	-
Critical Hdwy Stg 2	5.73	-	-	-	-	-
Follow-up Hdwy	3.797	3.3	2.299	-	-	-
Pot Cap-1 Maneuver	797	1009	1483	-	-	-
Stage 1	887	-	-	-	-	-
Stage 2	883	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	791	1009	1483	-	-	-
Mov Cap-2 Maneuver	791	-	-	-	-	-
Stage 1	887	-	-	-	-	-
Stage 2	876	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.9	1.5	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1483	-	984	-	-
HCM Lane V/C Ratio	0.007	-	0.057	-	-
HCM Control Delay (s)	7.4	0	8.9	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	4	9	24	44	36	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	62	62	85	85	54	54
Heavy Vehicles, %	33	0	11	5	16	0
Mvmt Flow	6	15	28	52	67	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	176	68	69	0	-	0
Stage 1	68	-	-	-	-	-
Stage 2	108	-	-	-	-	-
Critical Hdwy	6.73	6.2	4.21	-	-	-
Critical Hdwy Stg 1	5.73	-	-	-	-	-
Critical Hdwy Stg 2	5.73	-	-	-	-	-
Follow-up Hdwy	3.797	3.3	2.299	-	-	-
Pot Cap-1 Maneuver	748	1001	1477	-	-	-
Stage 1	882	-	-	-	-	-
Stage 2	845	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	733	1001	1477	-	-	-
Mov Cap-2 Maneuver	733	-	-	-	-	-
Stage 1	882	-	-	-	-	-
Stage 2	828	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.1	2.6	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1477	-	900	-	-
HCM Lane V/C Ratio	0.019	-	0.023	-	-
HCM Control Delay (s)	7.5	0	9.1	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

Intersection	
Int Delay, s/veh	4.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	5	48	14	37	49	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	59	59	82	82	81	81
Heavy Vehicles, %	33	0	11	3	16	0
Mvmt Flow	8	81	17	45	60	6

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	143	64	67	0	-	0
Stage 1	64	-	-	-	-	-
Stage 2	79	-	-	-	-	-
Critical Hdwy	6.73	6.2	4.21	-	-	-
Critical Hdwy Stg 1	5.73	-	-	-	-	-
Critical Hdwy Stg 2	5.73	-	-	-	-	-
Follow-up Hdwy	3.797	3.3	2.299	-	-	-
Pot Cap-1 Maneuver	782	1006	1479	-	-	-
Stage 1	886	-	-	-	-	-
Stage 2	871	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	773	1006	1479	-	-	-
Mov Cap-2 Maneuver	773	-	-	-	-	-
Stage 1	886	-	-	-	-	-
Stage 2	861	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.1	2	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1479	-	978	-	-
HCM Lane V/C Ratio	0.012	-	0.092	-	-
HCM Control Delay (s)	7.5	0	9.1	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	7	17	41	44	36	2
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	62	62	85	85	54	54
Heavy Vehicles, %	33	0	11	5	16	0
Mvmt Flow	11	27	48	52	67	4

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	217	69	70	0	-	0
Stage 1	69	-	-	-	-	-
Stage 2	148	-	-	-	-	-
Critical Hdwy	6.73	6.2	4.21	-	-	-
Critical Hdwy Stg 1	5.73	-	-	-	-	-
Critical Hdwy Stg 2	5.73	-	-	-	-	-
Follow-up Hdwy	3.797	3.3	2.299	-	-	-
Pot Cap-1 Maneuver	707	1000	1475	-	-	-
Stage 1	881	-	-	-	-	-
Stage 2	809	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	683	1000	1475	-	-	-
Mov Cap-2 Maneuver	683	-	-	-	-	-
Stage 1	881	-	-	-	-	-
Stage 2	781	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.3	3.6	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1475	-	881	-	-
HCM Lane V/C Ratio	0.033	-	0.044	-	-
HCM Control Delay (s)	7.5	0	9.3	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-