ADDENDUM ONE

TRAFFIC IMPACT AND SITE ACCESS STUDY

PROPOSED RESIDENTIAL SUBDIVISION

Portsmouth, New Hampshire

August 2018

Prepared for

Clipper Traders, LLC

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& Company, Inc.

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TRAFFIC IMPACT AND SITE ACCESS STUDY – ADDENDUM ONE
PROPOSED RESIDENTIAL DEVELOPMENT
PORTSMOUTH, NEW HAMPSHIRE
August 20, 2018

BACKGROUND

On June 18, 2018 this office published the *"Traffic Impact and Site Access Study"* for the 120-unit residential development proposed by Clipper Traders, LLC. Since the publication of that report, a second point of access/egress is now being proposed. More specifically, the existing shared driveway that extends from Bartlett Street will now be extended to Maplewood Avenue for use by the residents only. A private gate system will be installed east of Building B10 to prevent through traffic by the general public. Only residents and emergency vehicles will be able to activate the gate system. `

This addendum is intended to summarize the data collected at the **Maplewood Avenue/Existing Driveway/Vaughan Street** intersection, the future traffic projections, and the technical analyses of this intersection. Providing additional access/egress for site vehicles via Maplewood Avenue will reduce the impact at the three study area intersections on Bartlett Street. Consequently, the previously published traffic projections and analyses of these intersections are considered to be conservative on the "high" side.

PROPOSAL

The previous development proposal remains the same except that the residents will now be able to access the site via Bartlett Street and Maplewood Avenue. Attachment 1 shows the layout of the ten proposed residential buildings and the site driveway that extends easterly from the proposed cul-de-sac.

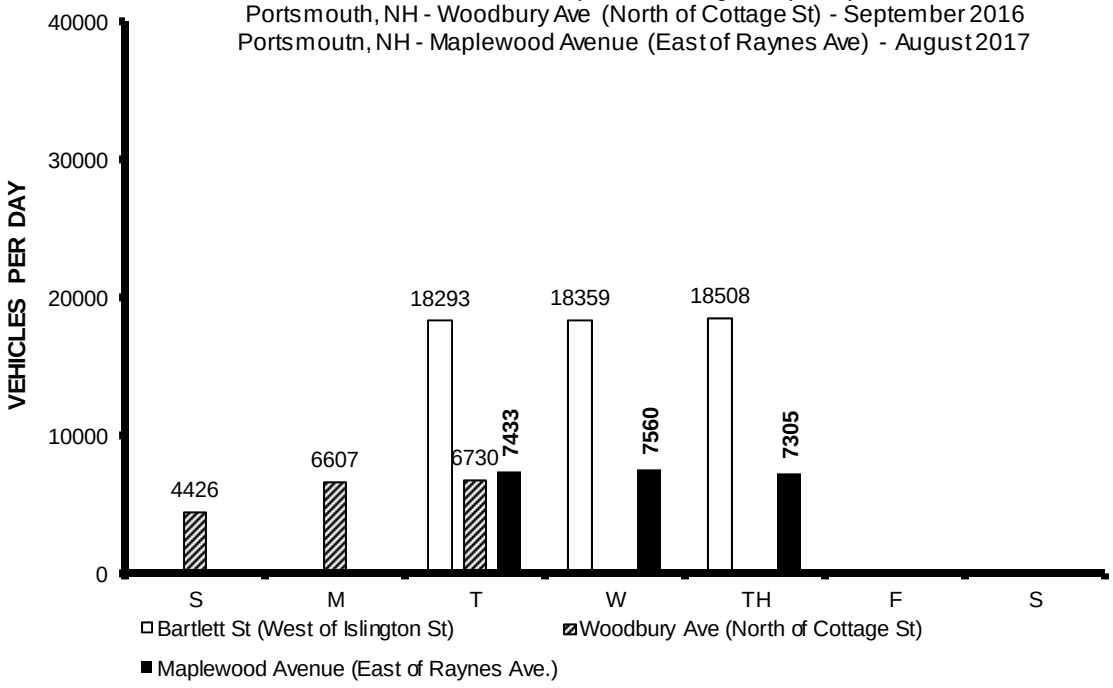
EXISTING CONDITIONS

Intersections - The **Maplewood Avenue/Existing Driveway/Vaughan Street** intersection functions as a typical four-leg intersection with one general-purpose approach lane on each leg of the intersection. The westbound Vaughan Street approach to Maplewood Avenue operates under stop sign control; there are no traffic control devices on the existing driveway approach.

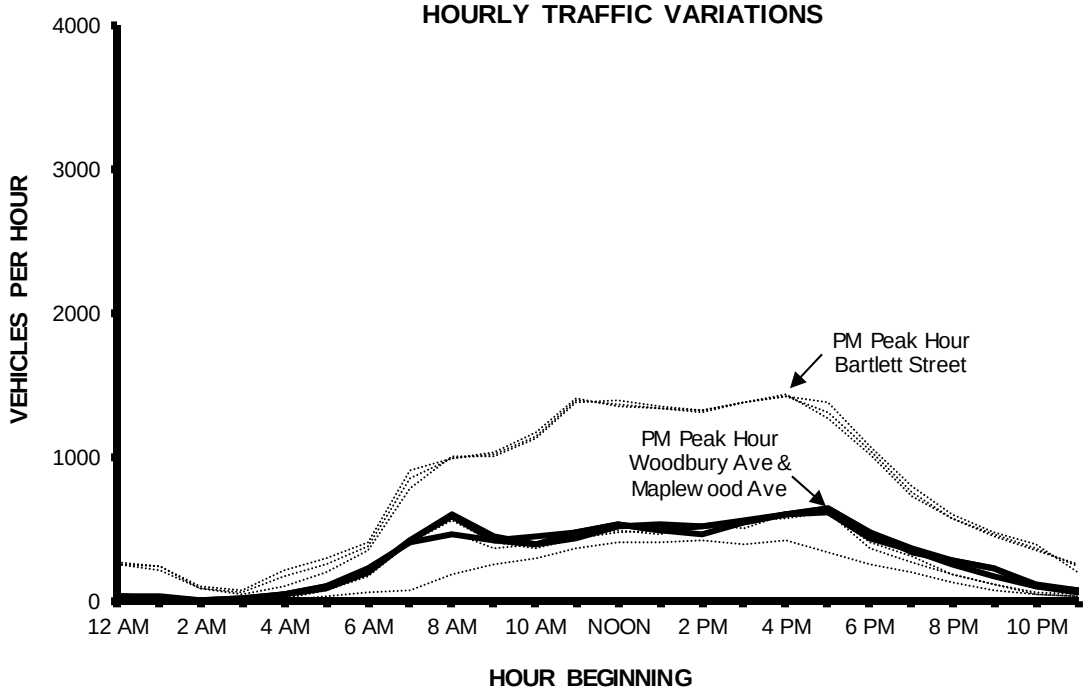
Traffic Volumes - Research at the New Hampshire Department of Transportation (NHDOT) revealed that a short-term automatic traffic recorder count was conducted on Maplewood Avenue (east of Raynes Avenue) in August 2017. This count station is located approximately 0.10 miles north of the subject intersection. This section of Maplewood Avenue carried an Annual Average Daily Traffic (AADT) volume of 6,474 vpd in 2017. The diagram on page 2 summarizes the daily and hourly variations in traffic demand along Maplewood Avenue and compares these with Bartlett Street and Woodbury Avenue. Attachments 2 & 3 contain additional details from the NHDOT count and demonstrate that traffic demand consistently reaches peak levels during weekday morning and evening commuter periods.

DAILY TRAFFIC VARIATIONS

Portsmouth, NH - Bartlett St (West of Islington St) - September 2017
Portsmouth, NH - Woodbury Ave (North of Cottage St) - September 2016
Portsmoutn, NH - Maplewood Avenue (East of Raynes Ave) - August 2017



HOURLY TRAFFIC VARIATIONS



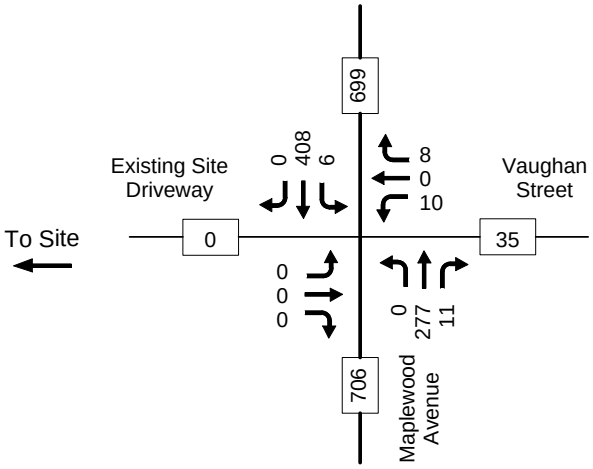
A supplemental intersection turning movement and vehicle classification count was conducted at the subject intersection on Tuesday, August 14th from 3:00 to 6:00 PM and on Wednesday, August 15th from 7:00 to 9:00 AM. The 2018 count data for this study area intersection is summarized on Figure 1. Several facts and conclusions are evident from this data.

- The traffic flow reached peak levels from 7:45 to 8:45 AM and from 4:30 to 5:30 PM. Maplewood Avenue (south of Vaughan Street) accommodated 706 (AM) and 881 (PM) vehicles during the peak hour periods. The majority (59%) traveled in the southbound direction during the morning, and northbound (60%) during the evening peak hour.
- The existing driveway carried only 0 (AM) and 3 (PM) vehicles during the peak hour periods.
- Vaughan Street carried 35 (AM) and 67 (PM) vehicles during the peak hour periods.

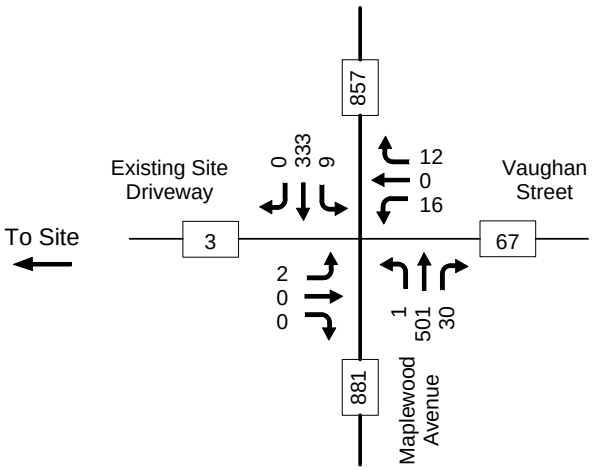
The detail sheets pertaining to the raw turning movement count data are found on Attachments 4 through 12.

NO-BUILD TRAFFIC VOLUMES

The No-Build traffic volumes for 2020 and 2030 are summarized schematically on Figure 2. These projections are based on the August 2018 traffic volumes, a 1-percent annual background traffic growth rate (compounded annually) to account for normal growth in the area, and peak-month seasonal adjustment factors of 1.07 (AM) and 1.02 (PM). Attachment 13 documents the derivation of the seasonal adjustment factors. The four other pending development projects that were identified at the "scope meeting" with city staff do not materially affect the subject intersection.



AM PEAK HOUR
Wednesday, August 15, 2018
7:45 - 8:45 AM
(720 vehicles)



PM PEAK HOUR
Tuesday, August 14, 2018
4:30 - 5:30 PM
(904 vehicles)

NORTH

1821A

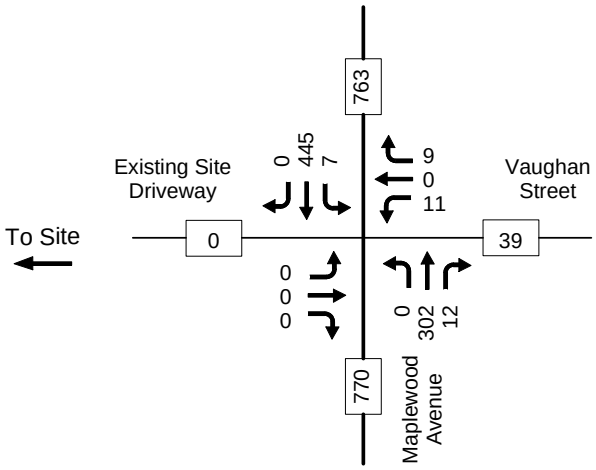
Figure 1 (A1)

2018 Existing Traffic Volumes

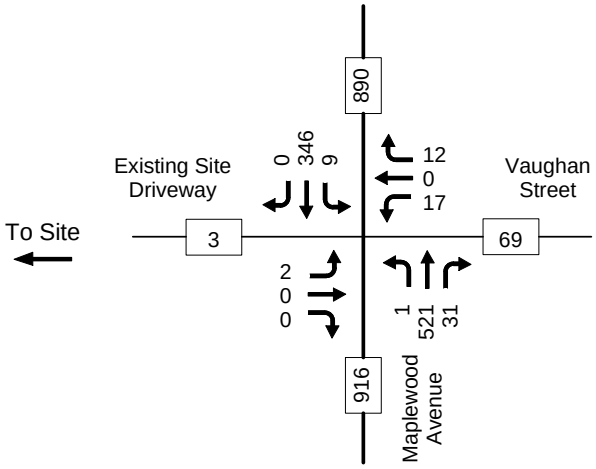
Traffic Impact Assessment, Proposed Residential Subdivision, Portsmouth, New Hampshire

Pernaw & Company, Inc

2020 Opening Year

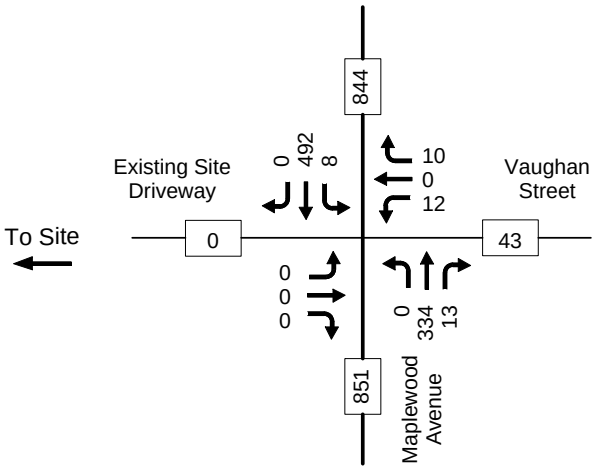


2020 AM No-Build

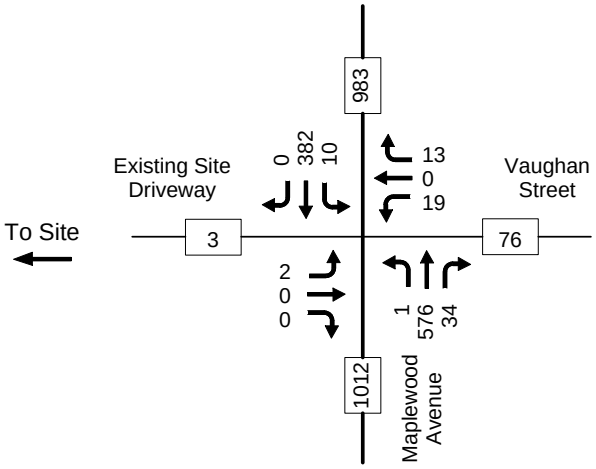


2020 PM No-Build

2030 Horizon Year



2030 AM No-Build



2030 PM No-Build

NORTH

1821A

Figure 2 (A1)

No-Build Traffic Volumes

Traffic Impact Assessment, Proposed Residential Subdivision, Portsmouth, New Hampshire

TRIP GENERATION

Table 1 in the previous study indicates that the proposed dwelling units will generate approximately 41 (AM) and 53 (PM) vehicle-trips during the weekday peak hour periods. The following table shows the anticipated breakdown between the two points of access based on the previously determined trip distribution patterns, and the availability of direct access to Maplewood Avenue.

Table 1 (A1) — Trip Generation Summary - 120 Dwelling Units

	Via Bartlett Street	Via Maplewood Avenue	Total
Weekday AM Peak Hour			
Entering	7 veh	4 veh	11 veh
Exiting	20 veh	10 veh	30 veh
Total	27 trips	14 trips	41 trips
Weekday PM Peak Hour			
Entering	21 veh	11 veh	32 veh
Exiting	15 veh	6 veh	21 veh
Total	36 trips	17 trips	53 trips

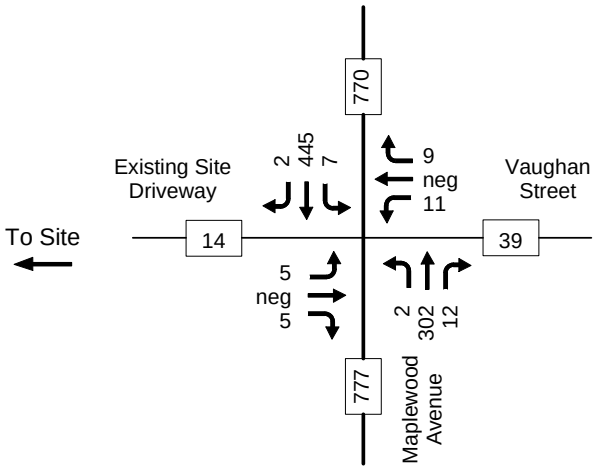
Attachment 14 shows the distribution of site traffic at the subject intersection. These diagrams show that single-digit traffic increases are expected on Maplewood Avenue during the peak hour periods. Corresponding decreases will occur on Bartlett Street.

BUILD TRAFFIC VOLUMES

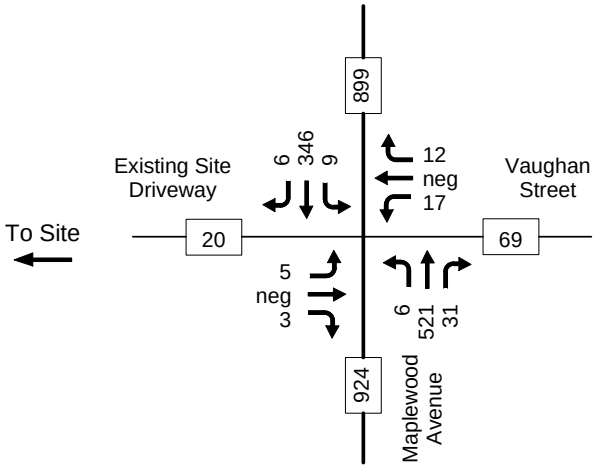
The Build traffic volumes for 2020 and 2030 are summarized schematically on Figure 3. These projections are based on the No-Build traffic volumes (Figure 2), the trip generation and trip distribution analyses from the original traffic study, and a re-assignment of site traffic given the additional access point (via Maplewood Avenue).

Pernaw & Company, Inc

2020 Opening Year

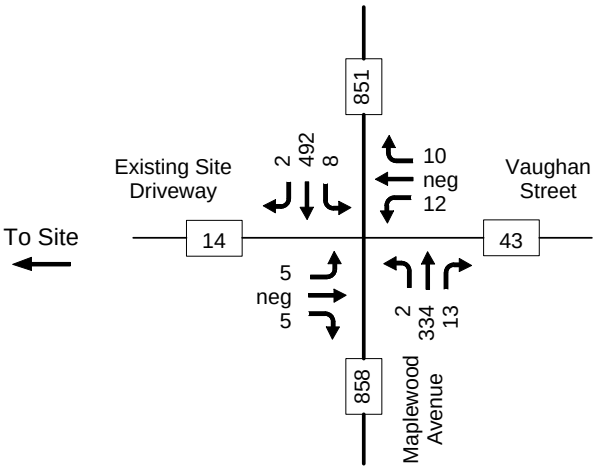


2020 AM Build

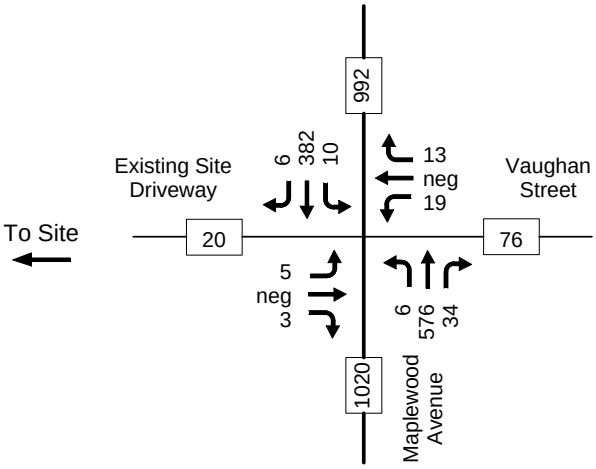


2020 PM Build

2030 Horizon Year



2030 AM Build



2030 PM Build

NORTH

1821A

Figure 3 (A1)

Build Traffic Volumes

Traffic Impact Assessment, Proposed Residential Subdivision, Portsmouth, New Hampshire

INTERSECTION CAPACITY

The short-range and long-range traffic projections were utilized to assess traffic operations at the **Maplewood Avenue/Existing Driveway/Vaughan Street** intersection. This intersection was analyzed in a similar fashion to the other study area intersections. The results are summarized on Table 2 and show that all applicable turning movements at this intersection will operate well below capacity and at LOS D or higher through 2030 with the proposed development fully occupied. The calculations pertaining to these analyses are attached (see Attachments 15-24).

AUXILLIARY TURN LANES

With fewer than ten left-turn and right-turn arrivals from Maplewood Avenue during the worst-case PM peak hour period, auxiliary turn lanes on Maplewood Avenue are not warranted. This means the existing general-purpose travel lane on the northbound and southbound approaches to the subject intersection can accommodate the anticipated traffic increases from the proposed development via the existing driveway.

SIGHT DISTANCE

Sight distance at intersections is an important safety consideration. The operator of a vehicle approaching an intersection should have an unobstructed view of the intersection and sufficient length of roadway to enable a full stop, should it be required to avoid a collision. Similarly, exiting vehicles from a minor approach should have sufficient visibility of approaching traffic in order to safely enter the traffic flow on the major street.

The view looking left and right from the site driveway approach to Maplewood Avenue is shown photographically on Attachment 25 and extends several hundred feet in each direction. The view looking left is somewhat dependent upon the extent of on-street parking north of the intersection, and vehicle positioning within the marked parking stalls. Drivers on the site driveway approach to Maplewood Avenue are able to pull forward to improve visibility. The view looking right toward approaching vehicles is clear back to the Deer Street signalized intersection. The stopping sight distance needed for the 25 mph posted speed limit is 155 feet. A 30 mph approach speed requires 200 feet.

The view looking left and right from the shared driveway approach to Bartlett Street is shown photographically on Attachment 26 and extends several hundred feet in each direction. The view looking left is clear back to the railroad bridge, and in the view looking right it is unrestricted. The stopping sight distance needed for the 20 mph posted speed limit is 115 feet. A 30 mph approach speed requires 200 feet.

Table 2 (A1)

STOP-Controlled Intersection Capacity Analysis
Maplewood Avenue / Vaughan Street / Existing Driveway

	Weekday AM Peak Hour				Weekday PM Peak Hour			
	Delay [1]	V/C [2]	LOS [3]	Queue [4]	Delay [1]	V/C [2]	LOS [3]	Queue [4]
Maplewood Avenue - NB Left-Turns								
2018 Existing	0.0	0.00	A	0	8.2	0.00	A	0
2020 No Build	0.0	0.00	A	0	8.2	0.00	A	0
2020 Build	8.4	0.00	A	0	8.2	0.01	A	0
2030 No Build	0.0	0.00	A	0	8.3	0.00	A	0
2030 Build	8.5	0.00	A	0	8.4	0.01	A	0
Existing Driveway - EB Departures								
2018 Existing	0.0	0.00	A	0	25.4	0.01	D	0
2020 No Build	0.0	0.00	A	0	26.8	0.01	D	0
2020 Build	15.3	0.03	C	<1	21.8	0.04	C	<1
2030 No Build	0.0	0.00	A	0	31.7	0.02	D	0
2030 Build	16.7	0.04	C	<1	25.3	0.05	D	<1
Vaughan Street - WB Departures								
2018 Existing	14.3	0.07	B	<1	21.5	0.14	C	<1
2020 No Build	15.4	0.08	C	<1	23.1	0.15	C	<1
2020 Build	15.6	0.08	C	<1	23.9	0.16	C	<1
2030 No Build	16.9	0.10	C	<1	27.9	0.20	D	<1
2030 Build	17.2	0.10	C	<1	29.2	0.21	D	<1
Maplewood Avenue - SB Left-Turns								
2018 Existing	8.1	0.01	A	0	9.3	0.01	A	0
2020 No Build	8.2	0.01	A	0	9.4	0.01	A	0
2020 Build	8.2	0.04	A	0	9.4	0.01	A	0
2030 No Build	8.3	0.01	A	0	9.7	0.02	A	<1
2030 Build	8.3	0.01	A	0	9.7	0.02	A	<1

[1] HCM Control Delay (seconds per vehicle)

[2] HCM Volume to Capacity Ratio

[3] HCM Level of Service

[4] HCM 95th Percentile Queue (vehicles)

ADDENDUM ONE CONCLUSIONS

Providing a second means of access/egress to the proposed residential development via Maplewood Avenue is beneficial for several reasons:

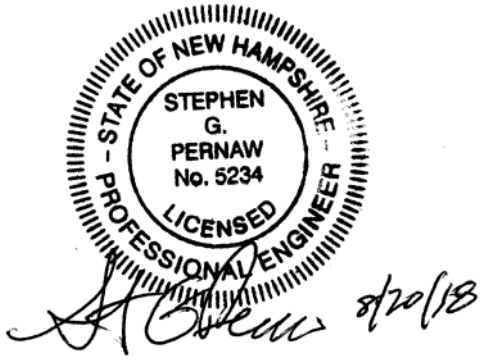
1. Site traffic will be dispersed within the site as residents will have a choice between two travel routes depending upon their trip origin/destination (rather than all being required to use Bartlett Street).

2. The use of a private gate system that is accessible to residents only (and emergency vehicles) will prevent the site driveway from being used as a "short-cut" between Bartlett Street and Maplewood Avenue by the general public. There will be no external through traffic on the site driveway.

3. Emergency vehicles will have a second means of access/egress to the proposed buildings. Emergency vehicles will also be able to use the site driveway as a "short-cut" between Maplewood Avenue and Bartlett Street in the event there are blockages or excessive delays on Islington Street.

4. The Maplewood Avenue/Site Driveway/Vaughan Street intersection is capable of accommodating the additional site traffic from the proposed development from a capacity and Level of Service standpoint.

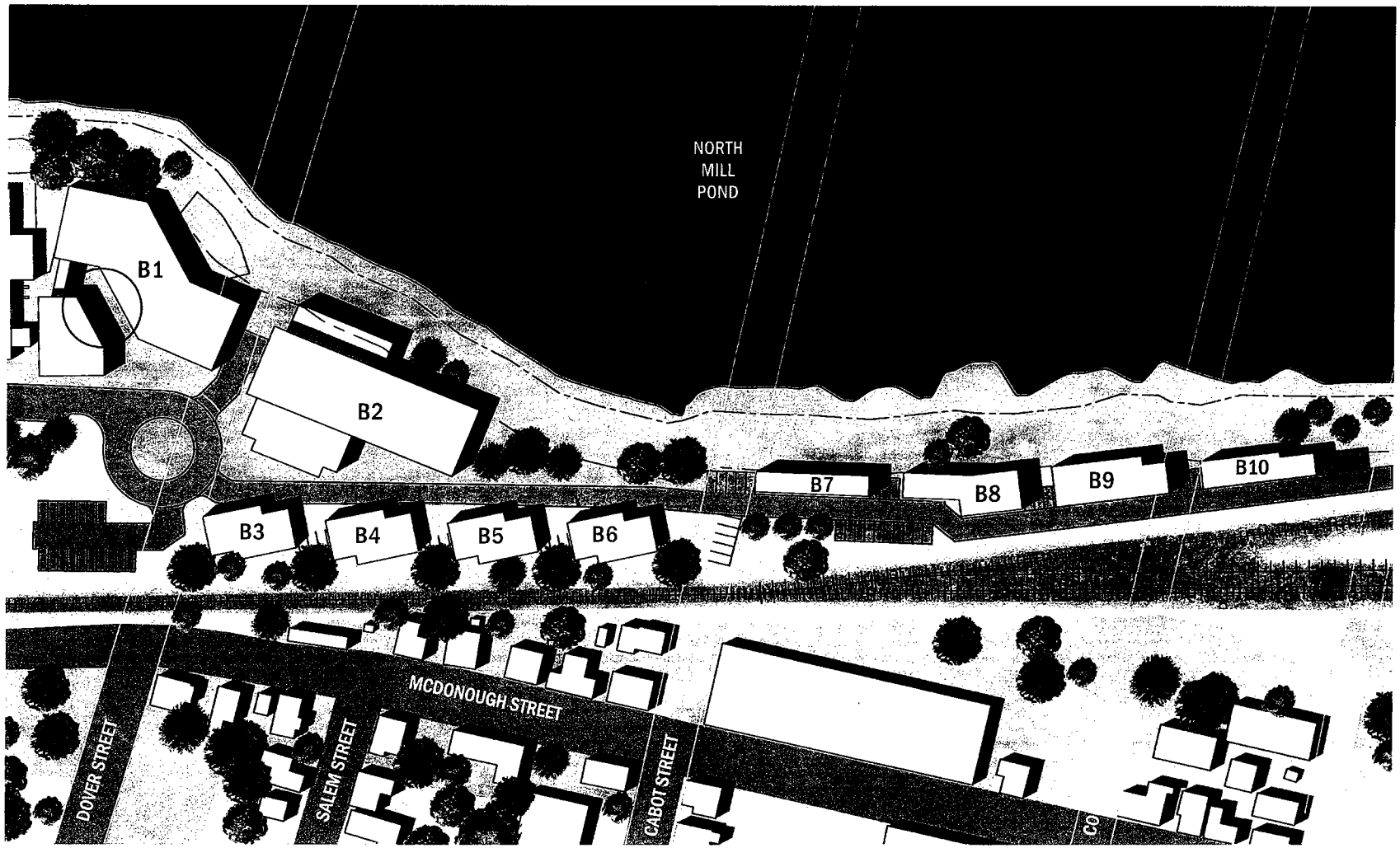
Other than the installation of stop sign control on the site driveway approach to Maplewood Avenue (with stop line and center line pavement markings) no physical modifications to this intersection are required.



CLIPPER TRADERS
PORTSMOUTH, NH

BUILDING AREAS

B1 - 18,000 SF +/-
B2- 19,000 SF +/-
B3- 2,950 SF +/-
B4- 2,950 SF +/-
B5- 2,530 +/-
B6- 2,530 +/-
B7- 1,800 SF +/-
B8- 2,850 SF +/-
B9- 3,400 SF +/-
B10- 2,350 SF +/-



PROJECT **CLIPPER TRADERS** | DRAWING **SITE PLAN** | 08/06/18 | 7 WALLINGFORD SQUARE UNIT 2099 KITTERY, ME 03904 207.994.3104 | **WINTER HOLBEN**

Attachment 1

New Hampshire DOT Department of Transportation

MS2

Transportation Data Management System

List View | All DIRs

Record 1 of 1 Goto Record go

Location ID	82379035	MPO ID	
Type	SPOT	HPMS ID	
On NHS	No	On HPMS	No
LRS ID	L3790368__	LRS Loc Pt.	
SF Group	04	Route Type	
AF Group	04	Route	
GF Group	E	Active	Yes
Class Dist Grp	Default	Category	3
Seas Clss Grp	Default		
WIM Group	Default		
QC Group	Default		
Fnct'l Class	Minor Arterial	Milepost	
Located On	Maplewood Ave		
Loc On Alias	MAPLEWOOD AVENUE EAST OF RAYNES AVENUE		

PR	MP	PT

More Detail

STATION DATA

Directions: 2-WAY

AADT

Year	AADT	DHV-30	K %	D %	PA	BC	Src
2017	6,474	648	10		6,010 (93%)	464 (7%)	
2016	7,564[3]				6,898 (91%)	666 (9%)	Grown from 2015
2015	7,416[3]						Grown from 2014
2014	7,200						
2011	11,000						

|<< < > >>| 1-5 of 10

Travel Demand Model

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

VOLUME COUNT

	Date	Int	Total
	Thu 8/31/2017	60	7,305
	Wed 8/30/2017	60	7,560
	Tue 8/29/2017	60	7,433
	Thu 8/7/2014	60	8,598
	Wed 8/6/2014	60	8,961
	Tue 8/5/2014	60	8,284
	Mon 8/4/2014	60	7,973

VOLUME TREND

Year	Annual Growth
2017	-14%
2016	2%
2015	3%
2014	-13%
2011	0%
2008	-1%
2005	-2%

New Hampshire DOT
Department of Transportation

MS2

Transportation Data Management System

Excel Version

Weekly Volume Report			
Location ID:	82379035	**Type:**	SPOT
Located On:	Maplew ood Ave	:	
Direction:	2-WAY		
Community:	PORTSMOUTH	**Period:**	Mon 8/28/2017 - Sun 9/3/2017
AADT:	6474		

Start Time	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Avg	Graph
12:00 AM		27	30	35				31	
1:00 AM		15	13	24				17	
2:00 AM		6	8	8				7	
3:00 AM		11	4	13				9	
4:00 AM		38	42	44				41	
5:00 AM		95	91	94				93	
6:00 AM		190	202	218				203	
7:00 AM		413	416	404				411	
8:00 AM		584	596	458				546	
9:00 AM		420	452	416				429	
10:00 AM		396	392	443				410	
11:00 AM		479	435	473				462	
12:00 PM		527	523	530				527	
1:00 PM		492	525	494				504	
2:00 PM		464	523	520				502	
3:00 PM		541	549	554				548	
4:00 PM		603	596	595				598	
5:00 PM		641	648	611				633	
6:00 PM		474	472	433				460	
7:00 PM		330	361	345				345	
8:00 PM		280	276	255				270	
9:00 PM		226	220	168				205	
10:00 PM		105	114	106				108	
11:00 PM		76	72	64				71	
Total	**0**	**7,433**	**7,560**	**7,305**	**0**	**0**	**0**		
24hr Total		7433	7560	7305				7,433	
AM Pk Hr		8:00	8:00	11:00					
AM Peak		584	596	473				551	
PM Pk Hr		5:00	5:00	5:00					
PM Peak		641	648	611				633	
% Pk Hr		8.62%	8.57%	8.36%				8.52%	

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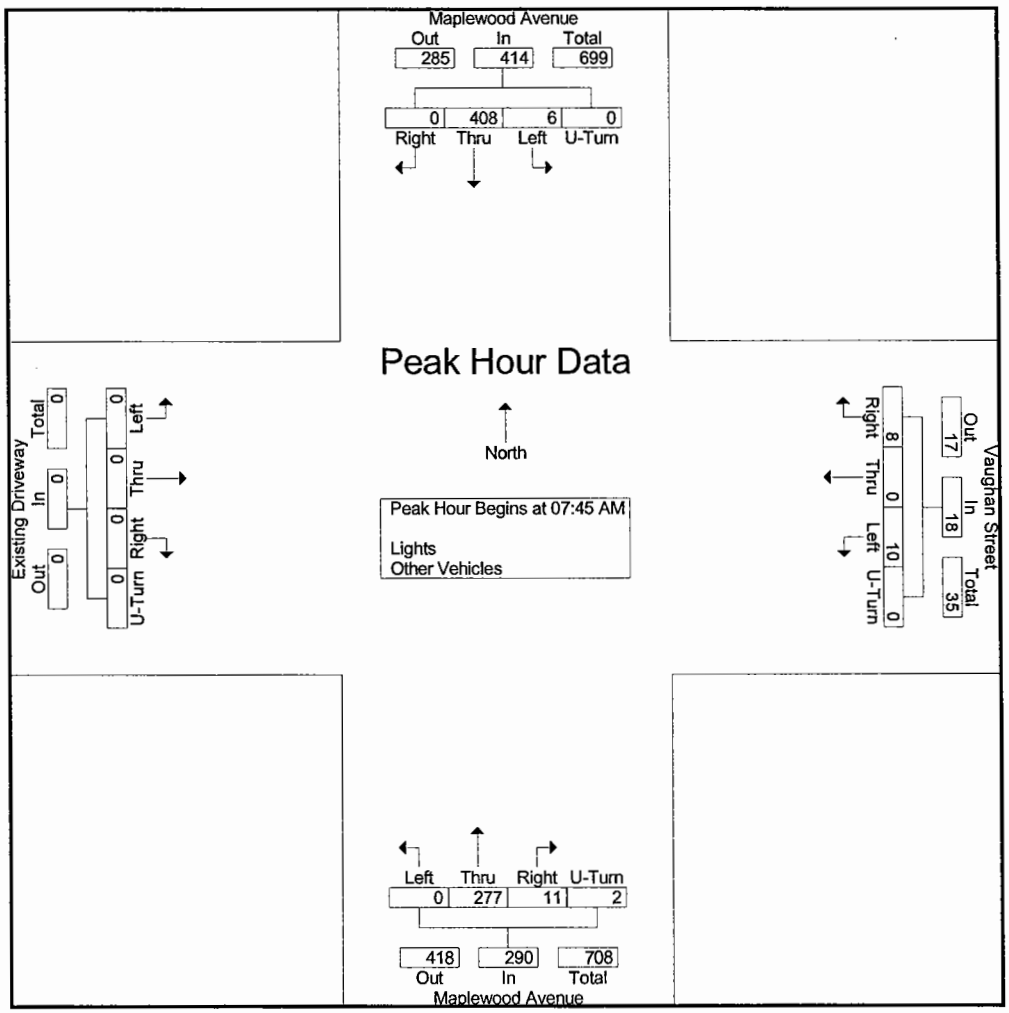
File Name : 1821A_Maplewood_AM_552750_08-15-2018
Site Code :
Start Date : 8/15/2018
Page No : 2

	Maplewood Avenue From North					Vaughan Street From East					Maplewood Avenue From South					Existing Driveway From West					
Start Time	U-Turn	Right	Thru	Left	App. Total	U-Turn	Right	Thru	Left	App. Total	U-Turn	Right	Thru	Left	App. Total	U-Turn	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:00 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:45 AM																					
07:45 AM	0	0	103	4	107	0	4	0	3	7	2	2	77	0	81	0	0	0	0	0	195
08:00 AM	0	0	114	2	116	0	1	0	3	4	0	5	75	0	80	0	0	0	0	0	200
08:15 AM	0	0	89	0	89	0	3	0	2	5	0	2	66	0	68	0	0	0	0	0	162
08:30 AM	0	0	102	0	102	0	0	0	2	2	0	2	59	0	61	0	0	0	0	0	165
Total Volume	0	0	408	6	414	0	8	0	10	18	2	11	277	0	290	0	0	0	0	0	722
% App. Total	0	0	98.6	1.4		0	44.4	0	55.6		0.7	3.8	95.5	0		0	0	0	0		
PHF	.000	.000	.895	.375	.892	.000	.500	.000	.833	.643	.250	.550	.899	.000	.895	.000	.000	.000	.000	.000	.903



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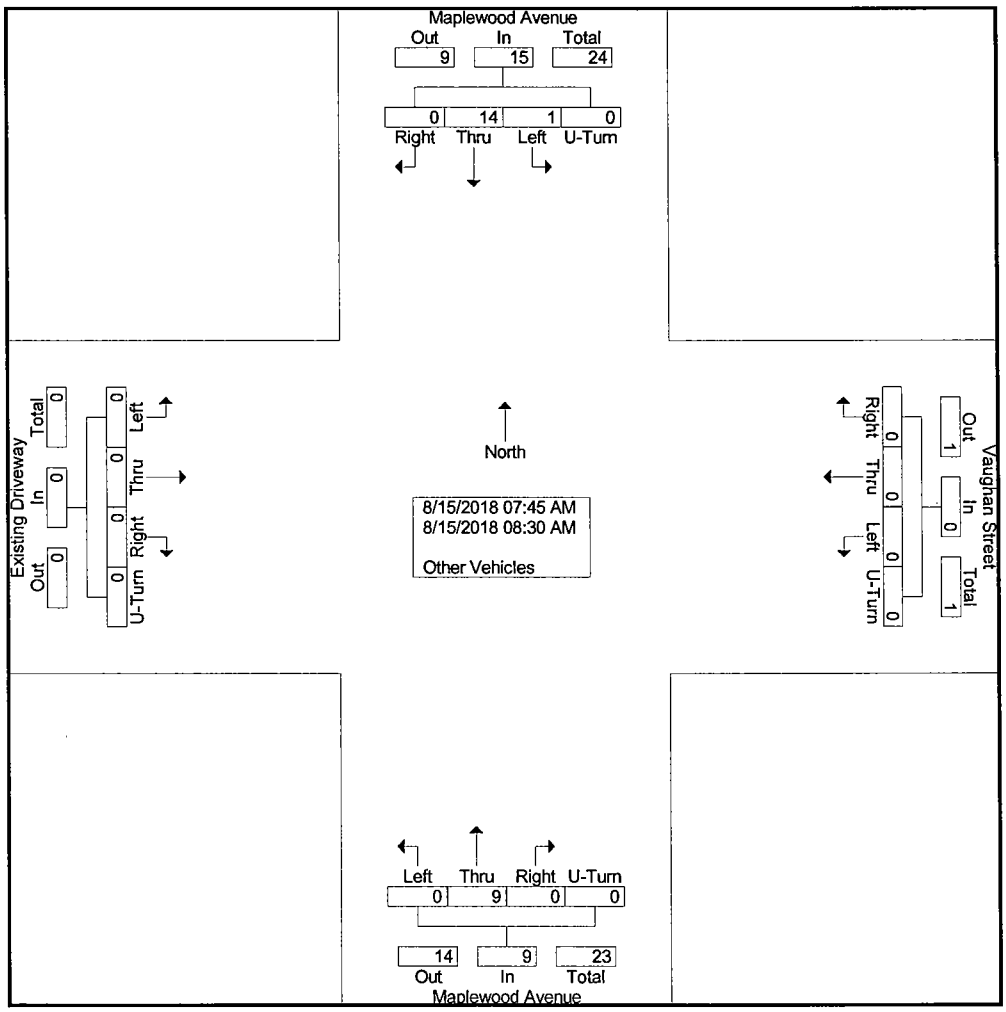
File Name : 1821A_Maplewood_AM_552750_08-15-2018
Site Code :
Start Date : 8/15/2018
Page No : 1

Groups Printed- Other Vehicles

	Maplewood Avenue From North					Vaughan Street From East					Maplewood Avenue From South					Existing Driveway From West					
Start Time	U-Turn	Right	Thru	Left	App. Total	U-Turn	Right	Thru	Left	App. Total	U-Turn	Right	Thru	Left	App. Total	U-Turn	Right	Thru	Left	App. Total	Int. Total
07:45 AM	0	0	4	0	4	0	0	0	0	0	0	0	3	0	3	0	0	0	0	0	7
Total	0	0	4	0	4	0	0	0	0	0	0	0	3	0	3	0	0	0	0	0	7
08:00 AM	0	0	4	1	5	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	6
08:15 AM	0	0	3	0	3	0	0	0	0	0	0	0	4	0	4	0	0	0	0	0	7
08:30 AM	0	0	3	0	3	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	4
Grand Total	0	0	14	1	15	0	0	0	0	0	0	0	9	0	9	0	0	0	0	0	24
Apprch %	0	0	93.3	6.7		0	0	0	0		0	0	100	0		0	0	0	0		
Total %	0	0	58.3	4.2	62.5	0	0	0	0	0	0	0	37.5	0	37.5	0	0	0	0	0	



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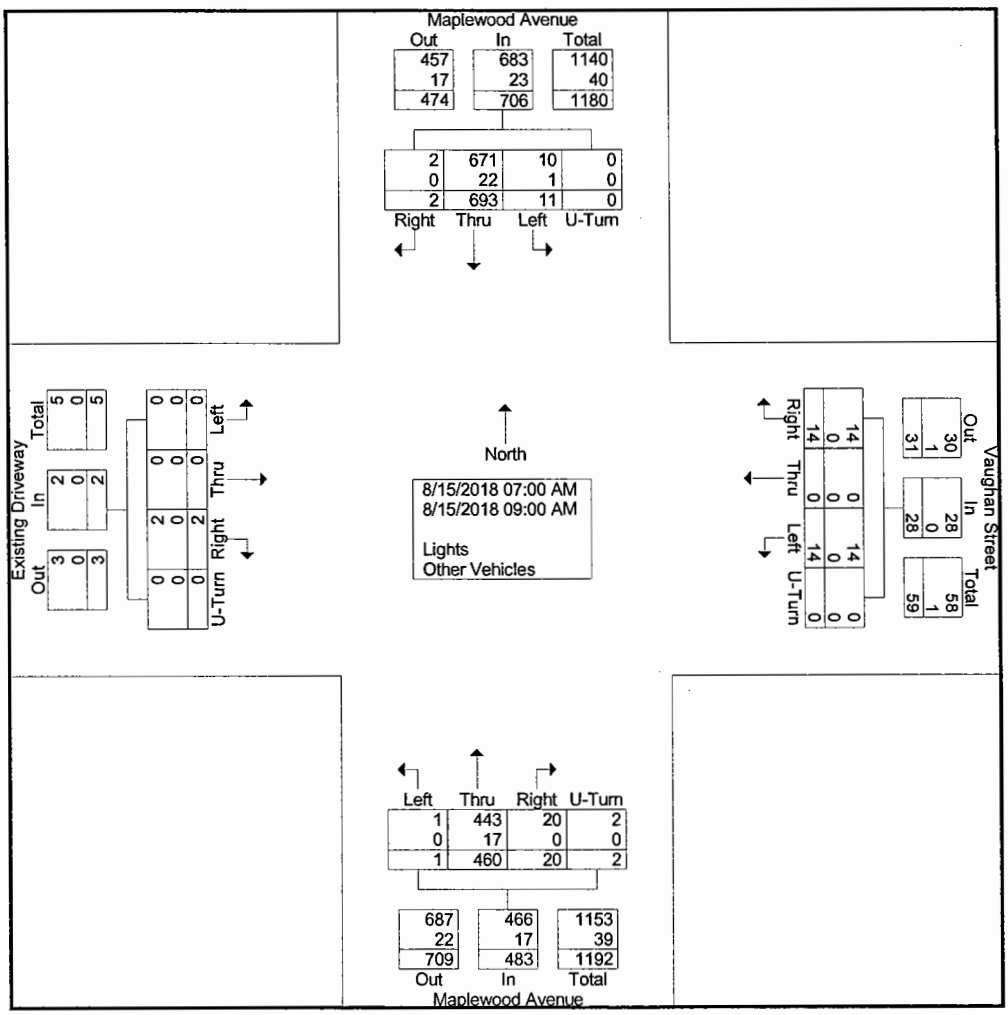
File Name : 1821A_Maplewood_AM_552750_08-15-2018
Site Code :
Start Date : 8/15/2018
Page No : 1

Groups Printed- Lights - Other Vehicles

	Maplewood Avenue From North					Vaughan Street From East					Maplewood Avenue From South					Existing Driveway From West					
Start Time	U-Turn	Right	Thru	Left	App. Total	U-Turn	Right	Thru	Left	App. Total	U-Turn	Right	Thru	Left	App. Total	U-Turn	Right	Thru	Left	App. Total	Int. Total
07:00 AM	0	2	59	0	61	0	0	0	1	1	0	1	38	0	39	0	1	0	0	1	102
07:15 AM	0	0	58	1	59	0	1	0	1	2	0	1	38	0	39	0	0	0	0	0	100
07:30 AM	0	0	69	2	71	0	3	0	0	3	0	4	48	1	53	0	1	0	0	1	128
07:45 AM	0	0	103	4	107	0	4	0	3	7	2	2	77	0	81	0	0	0	0	0	195
Total	0	2	289	7	298	0	8	0	5	13	2	8	201	1	212	0	2	0	0	2	525
08:00 AM	0	0	114	2	116	0	1	0	3	4	0	5	75	0	80	0	0	0	0	0	200
08:15 AM	0	0	89	0	89	0	3	0	2	5	0	2	66	0	68	0	0	0	0	0	162
08:30 AM	0	0	102	0	102	0	0	0	2	2	0	2	59	0	61	0	0	0	0	0	165
08:45 AM	0	0	99	2	101	0	2	0	2	4	0	3	59	0	62	0	0	0	0	0	167
Total	0	0	404	4	408	0	6	0	9	15	0	12	259	0	271	0	0	0	0	0	694
09:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	2	693	11	706	0	14	0	14	28	2	20	460	1	483	0	2	0	0	2	1219
Apprch %	0	0.3	98.2	1.6		0	50	0	50		0.4	4.1	95.2	0.2		0	100	0	0		
Total %	0	0.2	56.8	0.9	57.9	0	1.1	0	1.1	2.3	0.2	1.6	37.7	0.1	39.6	0	0.2	0	0	0.2	
Lights	0	2	671	10	683	0	14	0	14	28	2	20	443	1	466	0	2	0	0	2	1179
% Lights	0	100	96.8	90.9	96.7	0	100	0	100	100	100	100	96.3	100	96.5	0	100	0	0	100	96.7
Other Vehicles	0	0	22	1	23	0	0	0	0	0	0	0	17	0	17	0	0	0	0	0	40
% Other Vehicles	0	0	3.2	9.1	3.3	0	0	0	0	0	0	0	3.7	0	3.5	0	0	0	0	0	3.3



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Site Code :
Start Date : 8/15/2018
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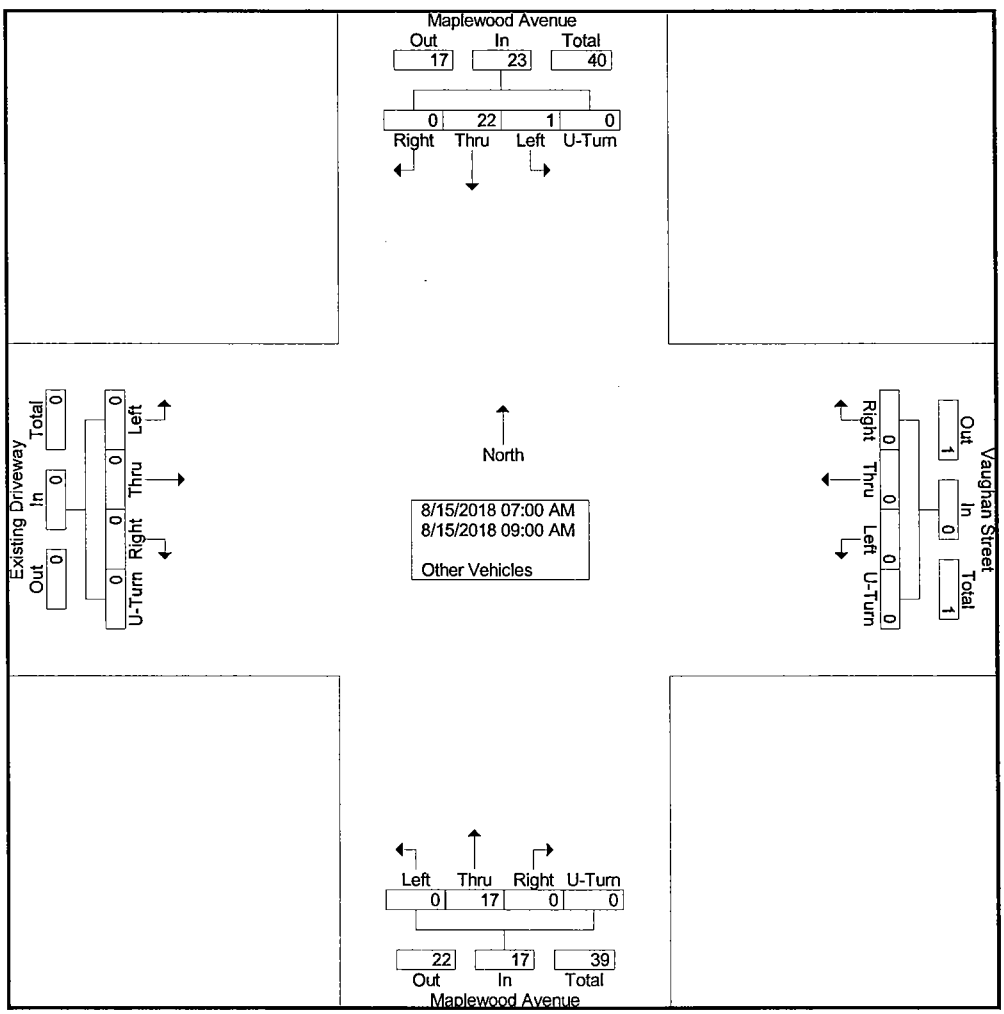
Groups Printed- Other Vehicles

	Maplewood Avenue From North					Vaughan Street From East					Maplewood Avenue From South					Existing Driveway From West					
Start Time	U-Turn	Right	Thru	Left	App. Total	U-Turn	Right	Thru	Left	App. Total	U-Turn	Right	Thru	Left	App. Total	U-Turn	Right	Thru	Left	App. Total	Int. Total
07:00 AM	0	0	6	0	6	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	7
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	2
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	2
07:45 AM	0	0	4	0	4	0	0	0	0	0	0	0	3	0	3	0	0	0	0	0	7
Total	0	0	10	0	10	0	0	0	0	0	0	0	8	0	8	0	0	0	0	0	18
08:00 AM	0	0	4	1	5	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	6
08:15 AM	0	0	3	0	3	0	0	0	0	0	0	0	4	0	4	0	0	0	0	0	7
08:30 AM	0	0	3	0	3	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	4
08:45 AM	0	0	2	0	2	0	0	0	0	0	0	0	3	0	3	0	0	0	0	0	5
Total	0	0	12	1	13	0	0	0	0	0	0	0	9	0	9	0	0	0	0	0	22
09:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	22	1	23	0	0	0	0	0	0	0	17	0	17	0	0	0	0	0	40
Apprch %	0	0	95.7	4.3		0	0	0	0		0	0	100	0		0	0	0	0		
Total %	0	0	55	2.5	57.5	0	0	0	0	0	0	0	42.5	0	42.5	0	0	0	0	0	



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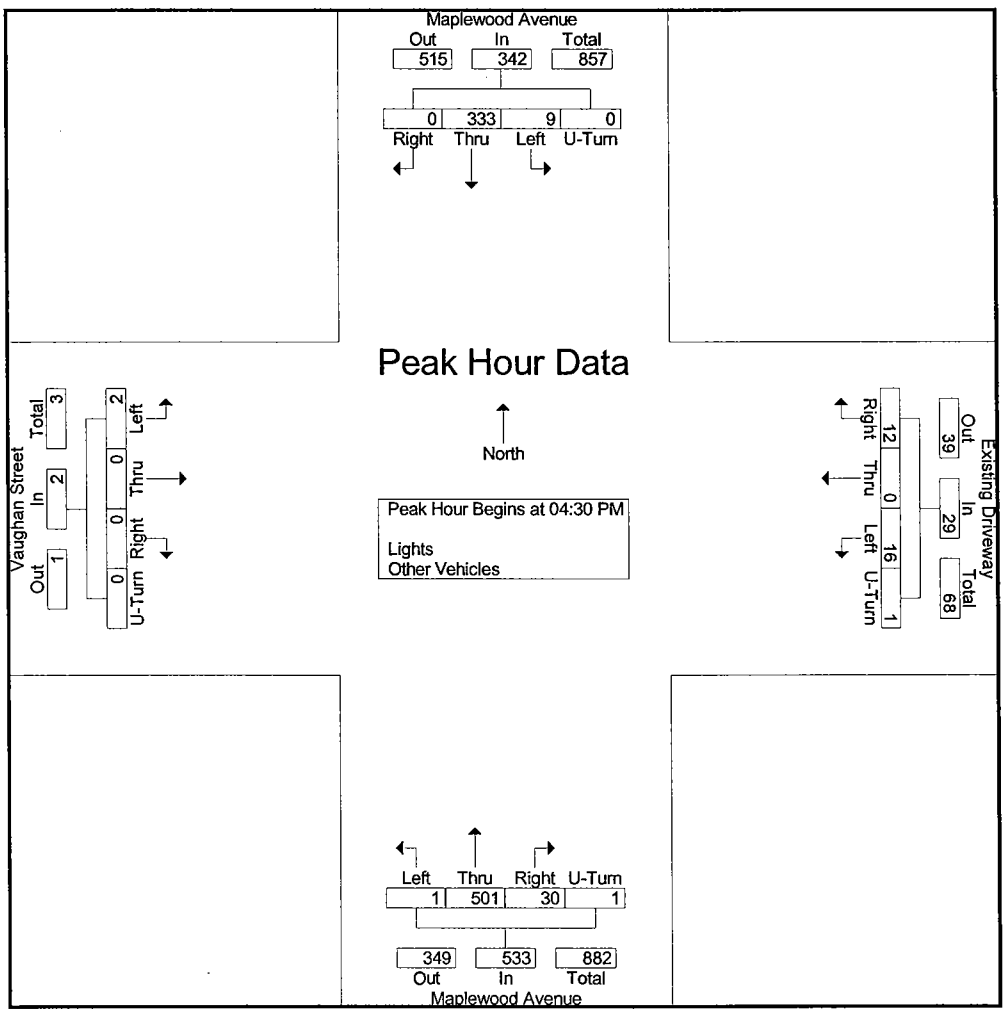
	Maplewood Avenue From North					Existing Driveway From East					Maplewood Avenue From South					Vaughan Street From West					
Start Time	U-Turn	Right	Thru	Left	App. Total	U-Turn	Right	Thru	Left	App. Total	U-Turn	Right	Thru	Left	App. Total	U-Turn	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	0	0	70	2	72	1	3	0	1	5	0	8	109	0	117	0	0	0	0	0	194
04:45 PM	0	0	80	3	83	0	4	0	5	9	0	9	128	0	137	0	0	0	0	0	229
05:00 PM	0	0	77	1	78	0	2	0	4	6	1	5	162	0	168	0	0	0	0	0	252
05:15 PM	0	0	106	3	109	0	3	0	6	9	0	8	102	1	111	0	0	0	2	2	231
Total Volume	0	0	333	9	342	1	12	0	16	29	1	30	501	1	533	0	0	0	2	2	906
% App. Total	0	0	97.4	2.6		3.4	41.4	0	55.2		0.2	5.6	94	0.2		0	0	0	100		
PHF	.000	.000	.785	.750	.784	.250	.750	.000	.667	.806	.250	.833	.773	.250	.793	.000	.000	.000	.250	.250	.899



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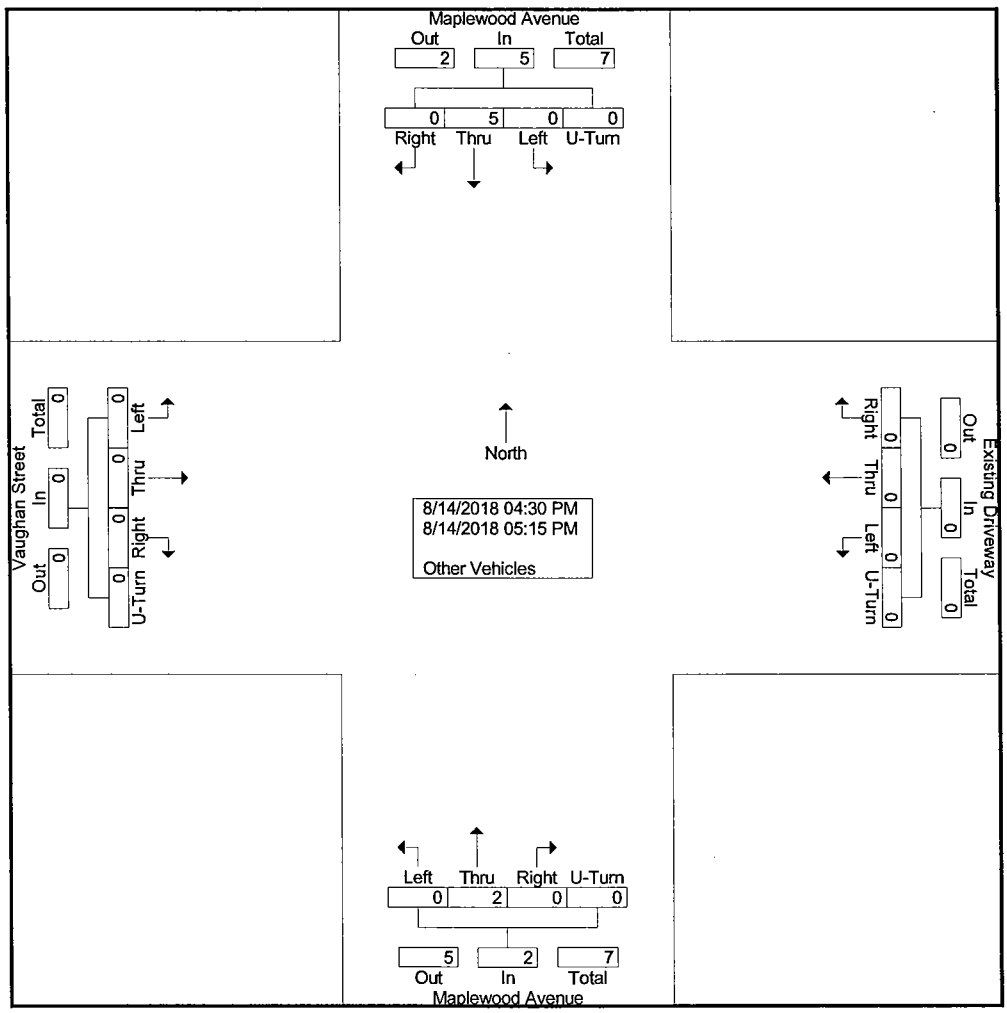
Groups Printed- Other Vehicles

	Maplewood Avenue From North					Existing Driveway From East					Maplewood Avenue From South					Vaughan Street From West					
Start Time	U-Turn	Right	Thru	Left	App. Total	U-Turn	Right	Thru	Left	App. Total	U-Turn	Right	Thru	Left	App. Total	U-Turn	Right	Thru	Left	App. Total	Int. Total
04:30 PM	0	0	2	0	2	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	3
04:45 PM	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Total	0	0	4	0	4	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	5
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1
05:15 PM	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Grand Total	0	0	5	0	5	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	7
Apprch %	0	0	100	0		0	0	0	0		0	0	100	0		0	0	0	0		
Total %	0	0	71.4	0	71.4	0	0	0	0	0	0	0	28.6	0	28.6	0	0	0	0	0	



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File Name : 1821A_Maplewood_552749_08-14-2018
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Groups Printed- Lights - Other Vehicles

	Maplewood Avenue From North					Existing Driveway From East					Maplewood Avenue From South					Vaughan Street From West					
Start Time	U-Turn	Right	Thru	Left	App. Total	U-Turn	Right	Thru	Left	App. Total	U-Turn	Right	Thru	Left	App. Total	U-Turn	Right	Thru	Left	App. Total	Int. Total
03:00 PM	0	0	73	3	76	0	3	0	3	6	0	7	117	0	124	0	0	0	3	3	209
03:15 PM	0	0	62	2	64	1	3	0	0	4	0	4	117	0	121	0	0	0	0	0	189
03:30 PM	0	0	75	2	77	0	6	0	4	10	0	3	100	0	103	0	0	0	0	0	190
03:45 PM	0	0	90	2	92	0	2	0	4	6	0	16	92	0	108	0	0	0	0	0	206
Total	0	0	300	9	309	1	14	0	11	26	0	30	426	0	456	0	0	0	3	3	794
04:00 PM	0	0	72	3	75	0	3	0	9	12	0	4	110	0	114	0	0	0	0	0	201
04:15 PM	1	0	85	2	88	0	4	0	4	8	0	11	106	0	117	0	0	0	0	0	213
04:30 PM	0	0	70	2	72	1	3	0	1	5	0	8	109	0	117	0	0	0	0	0	194
04:45 PM	0	0	80	3	83	0	4	0	5	9	0	9	128	0	137	0	0	0	0	0	229
Total	1	0	307	10	318	1	14	0	19	34	0	32	453	0	485	0	0	0	0	0	837
05:00 PM	0	0	77	1	78	0	2	0	4	6	1	5	162	0	168	0	0	0	0	0	252
05:15 PM	0	0	106	3	109	0	3	0	6	9	0	8	102	1	111	0	0	0	2	2	231
05:30 PM	0	0	79	3	82	0	1	0	2	3	0	9	98	0	107	0	0	0	0	0	192
05:45 PM	0	0	111	3	114	0	5	0	9	14	0	10	87	0	97	0	0	0	0	0	225
Total	0	0	373	10	383	0	11	0	21	32	1	32	449	1	483	0	0	0	2	2	900
Grand Total	1	0	980	29	1010	2	39	0	51	92	1	94	1328	1	1424	0	0	0	5	5	2531
Apprch %	0.1	0	97	2.9		2.2	42.4	0	55.4		0.1	6.6	93.3	0.1		0	0	0	100		
Total %	0	0	38.7	1.1	39.9	0.1	1.5	0	2	3.6	0	3.7	52.5	0	56.3	0	0	0	0.2	0.2	
Lights	1	0	968	29	998	2	39	0	50	91	1	92	1316	1	1410	0	0	0	5	5	2504
% Lights	100	0	98.8	100	98.8	100	100	0	98	98.9	100	97.9	99.1	100	99	0	0	0	100	100	98.9
Other Vehicles	0	0	12	0	12	0	0	0	1	1	0	2	12	0	14	0	0	0	0	0	27
% Other Vehicles	0	0	1.2	0	1.2	0	0	0	2	1.1	0	2.1	0.9	0	1	0	0	0	0	0	1.1

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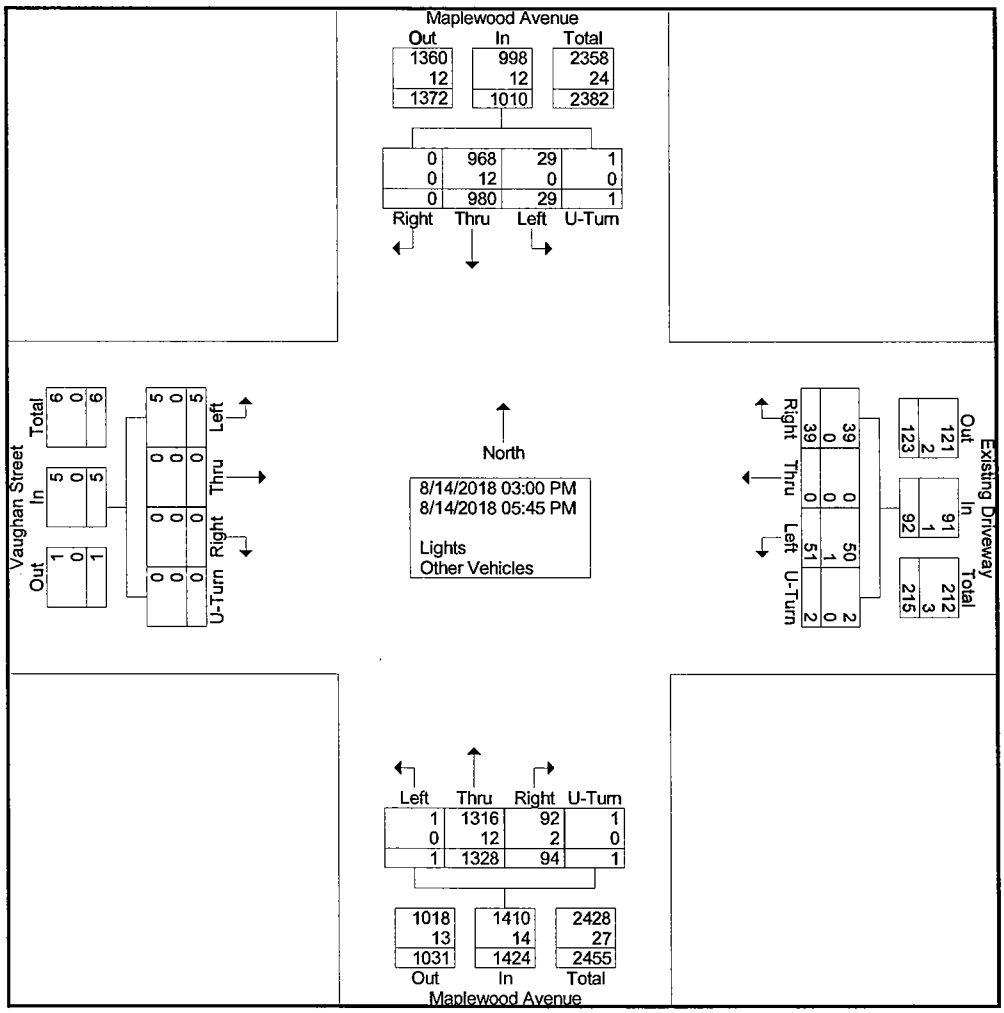

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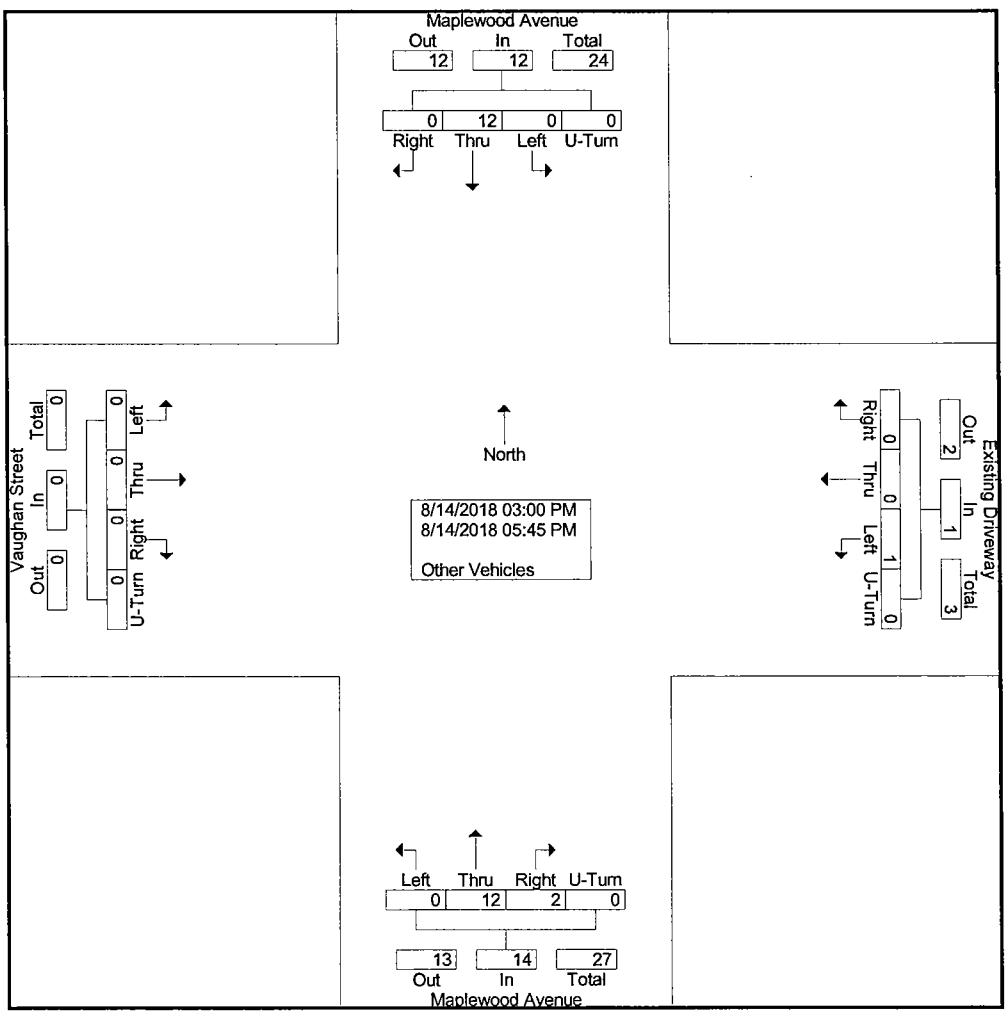
Groups Printed- Other Vehicles

	Maplewood Avenue From North					Existing Driveway From East					Maplewood Avenue From South					Vaughan Street From West					
Start Time	U-Turn	Right	Thru	Left	App. Total	U-Turn	Right	Thru	Left	App. Total	U-Turn	Right	Thru	Left	App. Total	U-Turn	Right	Thru	Left	App. Total	Int. Total
03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1
03:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	0	0	0	0	0	3
03:30 PM	0	0	2	0	2	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	4
03:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
Total	0	0	2	0	2	0	0	0	0	0	0	2	5	0	7	0	0	0	0	0	9
04:00 PM	0	0	2	0	2	0	0	0	1	1	0	0	2	0	2	0	0	0	0	0	5
04:15 PM	0	0	3	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
04:30 PM	0	0	2	0	2	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	3
04:45 PM	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Total	0	0	9	0	9	0	0	0	1	1	0	0	3	0	3	0	0	0	0	0	13
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1
05:15 PM	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	2
Total	0	0	1	0	1	0	0	0	0	0	0	0	4	0	4	0	0	0	0	0	5
Grand Total	0	0	12	0	12	0	0	0	1	1	0	2	12	0	14	0	0	0	0	0	27
Apprch %	0	0	100	0		0	0	0	100		0	14.3	85.7	0		0	0	0	0		
Total %	0	0	44.4	0	44.4	0	0	0	3.7	3.7	0	7.4	44.4	0	51.9	0	0	0	0	0	



Seasonal Adjustment Factors
NHDOT Group 4 (Urban Highways)

Stephen G. Pernaw & Company, Inc.

Year 2016 Monthly Data - Urban

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

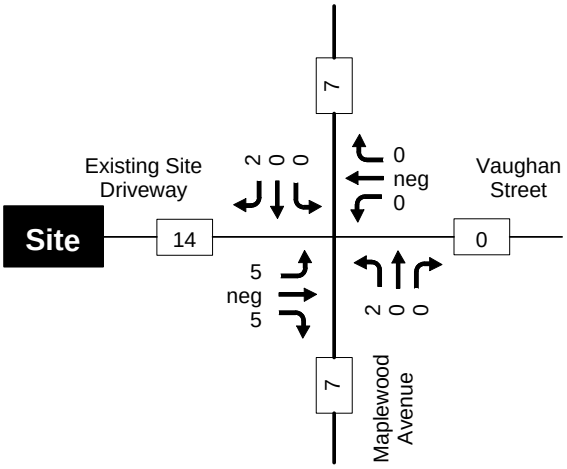
Year 2015 Monthly Data - Urban

	Data				Factors			
Month	AM	Mid	PM	Sat Mid	AM	Mid	PM	Sat Mid
Jan	17267	13564	20154	15524	1.11	1.14	1.11	1.17
Feb	17366	13436	20253	17441	1.10	1.16	1.11	1.05
Mar	19827	14389	22267	16671	0.97	1.08	1.01	1.09
Apr	19924	15214	22733	18484	0.96	1.02	0.99	0.99
May	20046	16198	23476	18916	0.96	0.96	0.96	0.96
Jun	19952	16451	23779	19485	0.96	0.94	0.94	0.94
Jul	18444	17126	23314	18349	1.04	0.91	0.96	0.99
Aug	18720	16672	23360	19436	1.02	0.93	0.96	0.94
Sep	20260	16000	23092	19374	0.95	0.97	0.97	0.94
Oct	20391	15823	23465	18951	0.94	0.98	0.96	0.96
Nov	19208	15635	21905	17902	1.00	0.99	1.02	1.02
Dec	18348	15787	21589	18339	1.04	0.98	1.04	0.99
Average	19146	15525	22449	18239				
Pk Factor:	**1.09**		**1.02**					

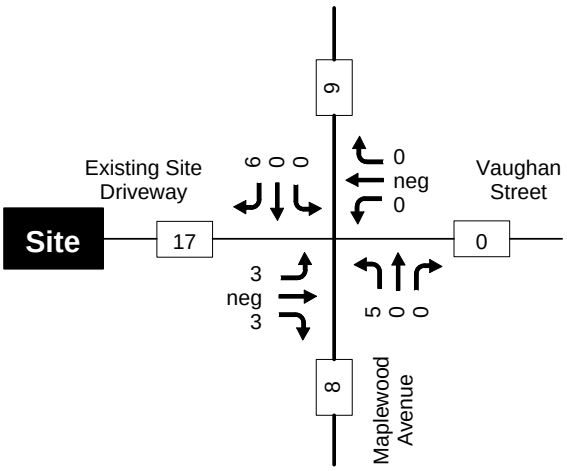
Year 2014 Monthly Data - Urban

	Data				Factors			
Month	AM	Mid	PM	Sat Mid	AM	Mid	PM	Sat Mid
Jan	21580	16848	24868	19655	1.07	1.12	1.09	1.13
Feb	21460	16679	23965	21354	1.08	1.13	1.13	1.04
Mar	23499	17228	26656	21889	0.99	1.09	1.01	1.01
Apr	24104	18688	27740	22425	0.96	1.01	0.97	0.99
May	24011	19395	28061	22720	0.96	0.97	0.96	0.98
Jun	24123	19815	28626	23204	0.96	0.95	0.94	0.96
Jul	22026	20438	27640	22602	1.05	0.92	0.98	0.98
Aug	22689	20373	28301	23080	1.02	0.93	0.95	0.96
Sep	24775	19221	28218	22917	0.93	0.98	0.96	0.97
Oct	24606	19167	28355	22965	0.94	0.98	0.95	0.97
Nov	23184	18959	25917	21967	1.00	0.99	1.04	1.01
Dec	21846	19450	25969	21696	1.06	0.97	1.04	1.02
Average	23159	18855	27026	22206				
Pk Factor:	**1.09**		**1.01**					

AVG Factor	**1.07**	**1.02**



AM PEAK HOUR



PM PEAK HOUR

NORTH

1821A

Attachment 14

Site Generated Traffic Volumes

Traffic Impact Assessment, Proposed Residential Subdivision, Portsmouth, New Hampshire

HCM 2010 TWSC
4: Maplewood Avenue & Existing Driveway/Vaughan Street

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	0	10	0	8	0	277	11	6	408	0
Future Vol, veh/h	0	0	0	10	0	8	0	277	11	6	408	0
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	-	-	2	-	-	-2	-
Peak Hour Factor	90	90	90	64	64	64	89	89	89	89	89	89
Heavy Vehicles, %	0	0	0	0	0	0	0	3	0	17	3	0
Mvmt Flow	0	0	0	16	0	13	0	311	12	7	458	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	796	795	458	789	789	317	458	0	0	323	0	0
Stage 1	472	472	-	317	317	-	-	-	-	-	-	-
Stage 2	324	323	-	472	472	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.27	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.353	-	-
Pot Cap-1 Maneuver	307	323	607	311	325	728	1114	-	-	1157	-	-
Stage 1	576	562	-	698	658	-	-	-	-	-	-	-
Stage 2	692	654	-	576	562	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	300	320	607	309	322	728	1114	-	-	1157	-	-
Mov Cap-2 Maneuver	300	320	-	309	322	-	-	-	-	-	-	-
Stage 1	576	558	-	698	658	-	-	-	-	-	-	-
Stage 2	680	654	-	571	558	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	14.3	0	0.1
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1114	-	-	-	415	1157	-	-
HCM Lane V/C Ratio	-	-	-	-	0.068	0.006	-	-
HCM Control Delay (s)	0	-	-	0	14.3	8.1	0	-
HCM Lane LOS	A	-	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0.2	0	-	-

HCM 2010 TWSC
4: Maplewood Avenue & Existing Driveway/Vaughan Street

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	0	0	0	11	0	9	0	302	12	7	445	0
Future Vol, veh/h	0	0	0	11	0	9	0	302	12	7	445	0
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	-	-	2	-	-	-2	-
Peak Hour Factor	90	90	90	64	64	64	89	89	89	89	89	89
Heavy Vehicles, %	0	0	0	0	0	0	0	3	0	17	3	0
Mvmt Flow	0	0	0	17	0	14	0	339	13	8	500	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	869	868	500	862	862	346	500	0	0	352	0	0
Stage 1	516	516	-	346	346	-	-	-	-	-	-	-
Stage 2	353	352	-	516	516	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.27	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.353	-	-
Pot Cap-1 Maneuver	274	293	575	277	295	702	1075	-	-	1128	-	-
Stage 1	546	538	-	674	639	-	-	-	-	-	-	-
Stage 2	668	635	-	546	538	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	266	290	575	275	292	702	1075	-	-	1128	-	-
Mov Cap-2 Maneuver	266	290	-	275	292	-	-	-	-	-	-	-
Stage 1	546	533	-	674	639	-	-	-	-	-	-	-
Stage 2	655	635	-	541	533	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	15.4	0	0.1
HCM LOS	A	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1075	-	-	-	379	1128	-	-
HCM Lane V/C Ratio	-	-	-	-	0.082	0.007	-	-
HCM Control Delay (s)	0	-	-	0	15.4	8.2	0	-
HCM Lane LOS	A	-	-	A	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0.3	0	-	-

HCM 2010 TWSC
4: Maplewood Avenue & Existing Driveway/Vaughan Street

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	0	5	11	0	9	2	302	12	7	445	2
Future Vol, veh/h	5	0	5	11	0	9	2	302	12	7	445	2
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	-	-	2	-	-	-2	-
Peak Hour Factor	90	90	90	64	64	64	89	89	89	89	89	89
Heavy Vehicles, %	0	0	0	0	0	0	0	3	0	17	3	0
Mvmt Flow	6	0	6	17	0	14	2	339	13	8	500	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	874	873	501	870	868	346	502	0	0	352	0	0
Stage 1	517	517	-	350	350	-	-	-	-	-	-	-
Stage 2	357	356	-	520	518	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.27	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.353	-	-
Pot Cap-1 Maneuver	272	291	574	274	293	702	1073	-	-	1128	-	-
Stage 1	545	537	-	671	636	-	-	-	-	-	-	-
Stage 2	665	633	-	543	536	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	264	288	574	269	289	702	1073	-	-	1128	-	-
Mov Cap-2 Maneuver	264	288	-	269	289	-	-	-	-	-	-	-
Stage 1	544	532	-	670	635	-	-	-	-	-	-	-
Stage 2	650	632	-	532	531	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	15.3	15.6	0.1	0.1
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1073	-	-	362	372	1128	-	-
HCM Lane V/C Ratio	0.002	-	-	0.031	0.084	0.007	-	-
HCM Control Delay (s)	8.4	0	-	15.3	15.6	8.2	0	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.3	0	-	-

HCM 2010 TWSC
4: Maplewood Avenue & Existing Driveway/Vaughan Street

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	0	0	0	12	0	10	0	334	13	8	492	0
Future Vol, veh/h	0	0	0	12	0	10	0	334	13	8	492	0
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	-	-	2	-	-	-2	-
Peak Hour Factor	90	90	90	64	64	64	89	89	89	89	89	89
Heavy Vehicles, %	0	0	0	0	0	0	0	3	0	17	3	0
Mvmt Flow	0	0	0	19	0	16	0	375	15	9	553	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	962	961	553	954	954	383	553	0	0	390	0	0
Stage 1	571	571	-	383	383	-	-	-	-	-	-	-
Stage 2	391	390	-	571	571	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.27	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.353	-	-
Pot Cap-1 Maneuver	237	258	537	240	261	669	1027	-	-	1091	-	-
Stage 1	509	508	-	644	616	-	-	-	-	-	-	-
Stage 2	637	611	-	509	508	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	229	255	537	238	258	669	1027	-	-	1091	-	-
Mov Cap-2 Maneuver	229	255	-	238	258	-	-	-	-	-	-	-
Stage 1	509	502	-	644	616	-	-	-	-	-	-	-
Stage 2	622	611	-	503	502	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	16.9	0	0.1
HCM LOS	A	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1027	-	-	-	337	1091	-	-
HCM Lane V/C Ratio	-	-	-	-	0.102	0.008	-	-
HCM Control Delay (s)	0	-	-	0	16.9	8.3	0	-
HCM Lane LOS	A	-	-	A	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0.3	0	-	-

HCM 2010 TWSC
4: Maplewood Avenue & Existing Driveway/Vaughan Street

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	0	5	12	0	10	2	334	13	8	492	2
Future Vol, veh/h	5	0	5	12	0	10	2	334	13	8	492	2
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	-	-	2	-	-	-2	-
Peak Hour Factor	90	90	90	64	64	64	89	89	89	89	89	89
Heavy Vehicles, %	0	0	0	0	0	0	0	3	0	17	3	0
Mvmt Flow	6	0	6	19	0	16	2	375	15	9	553	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	967	966	554	962	960	383	555	0	0	390	0	0
Stage 1	572	572	-	387	387	-	-	-	-	-	-	-
Stage 2	395	394	-	575	573	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.27	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.353	-	-
Pot Cap-1 Maneuver	236	257	536	237	259	669	1026	-	-	1091	-	-
Stage 1	509	508	-	641	613	-	-	-	-	-	-	-
Stage 2	634	609	-	507	507	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	228	253	536	232	255	669	1026	-	-	1091	-	-
Mov Cap-2 Maneuver	228	253	-	232	255	-	-	-	-	-	-	-
Stage 1	508	502	-	640	612	-	-	-	-	-	-	-
Stage 2	618	608	-	496	501	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	16.7	17.2	0	0.1
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1026	-	-	320	330	1091	-	-
HCM Lane V/C Ratio	0.002	-	-	0.035	0.104	0.008	-	-
HCM Control Delay (s)	8.5	0	-	16.7	17.2	8.3	0	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.3	0	-	-

HCM 2010 TWSC
4: Maplewood Avenue & Existing Driveway/Vaughan Street

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	0	0	16	0	12	1	501	30	9	333	0
Future Vol, veh/h	2	0	0	16	0	12	1	501	30	9	333	0
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	-	-	2	-	-	-2	-
Peak Hour Factor	90	90	90	81	81	81	79	79	79	78	78	78
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	17	2	0
Mvmt Flow	2	0	0	20	0	15	1	634	38	12	427	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1114	1125	427	1106	1106	653	427	0	0	672	0	0
Stage 1	451	451	-	655	655	-	-	-	-	-	-	-
Stage 2	663	674	-	451	451	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.27	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.353	-	-
Pot Cap-1 Maneuver	187	207	632	190	212	471	1143	-	-	852	-	-
Stage 1	592	574	-	458	466	-	-	-	-	-	-	-
Stage 2	454	457	-	592	574	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	179	203	632	187	208	471	1143	-	-	852	-	-
Mov Cap-2 Maneuver	179	203	-	187	208	-	-	-	-	-	-	-
Stage 1	591	564	-	458	466	-	-	-	-	-	-	-
Stage 2	439	457	-	581	564	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	25.4	21.5	0	0.2
HCM LOS	D	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1143	-	-	179	252	852	-	-
HCM Lane V/C Ratio	0.001	-	-	0.012	0.137	0.014	-	-
HCM Control Delay (s)	8.2	0	-	25.4	21.5	9.3	0	-
HCM Lane LOS	A	A	-	D	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.5	0	-	-

HCM 2010 TWSC
4: Maplewood Avenue & Existing Driveway/Vaughan Street

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	0	0	17	0	12	1	521	31	9	346	0
Future Vol, veh/h	2	0	0	17	0	12	1	521	31	9	346	0
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	-	-	2	-	-	-2	-
Peak Hour Factor	90	90	90	81	81	81	79	79	79	78	78	78
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	17	2	0
Mvmt Flow	2	0	0	21	0	15	1	659	39	12	444	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1156	1168	444	1149	1149	679	444	0	0	698	0	0
Stage 1	468	468	-	681	681	-	-	-	-	-	-	-
Stage 2	688	700	-	468	468	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.27	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.353	-	-
Pot Cap-1 Maneuver	175	195	618	177	200	455	1127	-	-	833	-	-
Stage 1	579	565	-	444	453	-	-	-	-	-	-	-
Stage 2	440	444	-	579	565	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	167	191	618	174	196	455	1127	-	-	833	-	-
Mov Cap-2 Maneuver	167	191	-	174	196	-	-	-	-	-	-	-
Stage 1	578	554	-	444	453	-	-	-	-	-	-	-
Stage 2	425	444	-	568	554	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	26.8	23.1	0	0.2
HCM LOS	D	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1127	-	-	167	234	833	-	-
HCM Lane V/C Ratio	0.001	-	-	0.013	0.153	0.014	-	-
HCM Control Delay (s)	8.2	0	-	26.8	23.1	9.4	0	-
HCM Lane LOS	A	A	-	D	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.5	0	-	-

HCM 2010 TWSC
4: Maplewood Avenue & Existing Driveway/Vaughan Street

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	0	3	17	0	12	6	521	31	9	346	6
Future Vol, veh/h	5	0	3	17	0	12	6	521	31	9	346	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	2	-	-	-2	-
Peak Hour Factor	90	90	90	81	81	81	79	79	79	78	78	78
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	17	2	0
Mvmt Flow	6	0	3	21	0	15	8	659	39	12	444	8

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1174	1186	448	1169	1171	679	452	0	0	698	0	0
Stage 1	472	472	-	695	695	-	-	-	-	-	-	-
Stage 2	702	714	-	474	476	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.27	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.353	-	-
Pot Cap-1 Maneuver	170	190	615	172	194	455	1119	-	-	833	-	-
Stage 1	576	562	-	436	447	-	-	-	-	-	-	-
Stage 2	432	438	-	575	560	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	161	184	615	167	188	455	1119	-	-	833	-	-
Mov Cap-2 Maneuver	161	184	-	167	188	-	-	-	-	-	-	-
Stage 1	569	551	-	431	442	-	-	-	-	-	-	-
Stage 2	413	433	-	561	549	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	21.8	23.9	0.1	0.2
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1119	-	-	223	226	833	-	-
HCM Lane V/C Ratio	0.007	-	-	0.04	0.158	0.014	-	-
HCM Control Delay (s)	8.2	0	-	21.8	23.9	9.4	0	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.6	0	-	-

HCM 2010 TWSC
4: Maplewood Avenue & Existing Driveway/Vaughan Street

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	0	0	19	0	13	1	576	34	10	382	0
Future Vol, veh/h	2	0	0	19	0	13	1	576	34	10	382	0
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	-	-	2	-	-	-2	-
Peak Hour Factor	90	90	90	81	81	81	79	79	79	78	78	78
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	17	2	0
Mvmt Flow	2	0	0	23	0	16	1	729	43	13	490	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1277	1290	490	1269	1269	751	490	0	0	772	0	0
Stage 1	516	516	-	753	753	-	-	-	-	-	-	-
Stage 2	761	774	-	516	516	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.27	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.353	-	-
Pot Cap-1 Maneuver	145	165	582	147	170	414	1084	-	-	780	-	-
Stage 1	546	538	-	405	420	-	-	-	-	-	-	-
Stage 2	401	411	-	546	538	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	137	161	582	144	166	414	1084	-	-	780	-	-
Mov Cap-2 Maneuver	137	161	-	144	166	-	-	-	-	-	-	-
Stage 1	545	526	-	404	419	-	-	-	-	-	-	-
Stage 2	385	410	-	533	526	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	31.7	27.9	0	0.2
HCM LOS	D	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1084	-	-	137	196	780	-	-
HCM Lane V/C Ratio	0.001	-	-	0.016	0.202	0.016	-	-
HCM Control Delay (s)	8.3	0	-	31.7	27.9	9.7	0	-
HCM Lane LOS	A	A	-	D	D	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.7	0.1	-	-

HCM 2010 TWSC
4: Maplewood Avenue & Existing Driveway/Vaughan Street

Intersection												
Int Delay, s/veh	1.2											

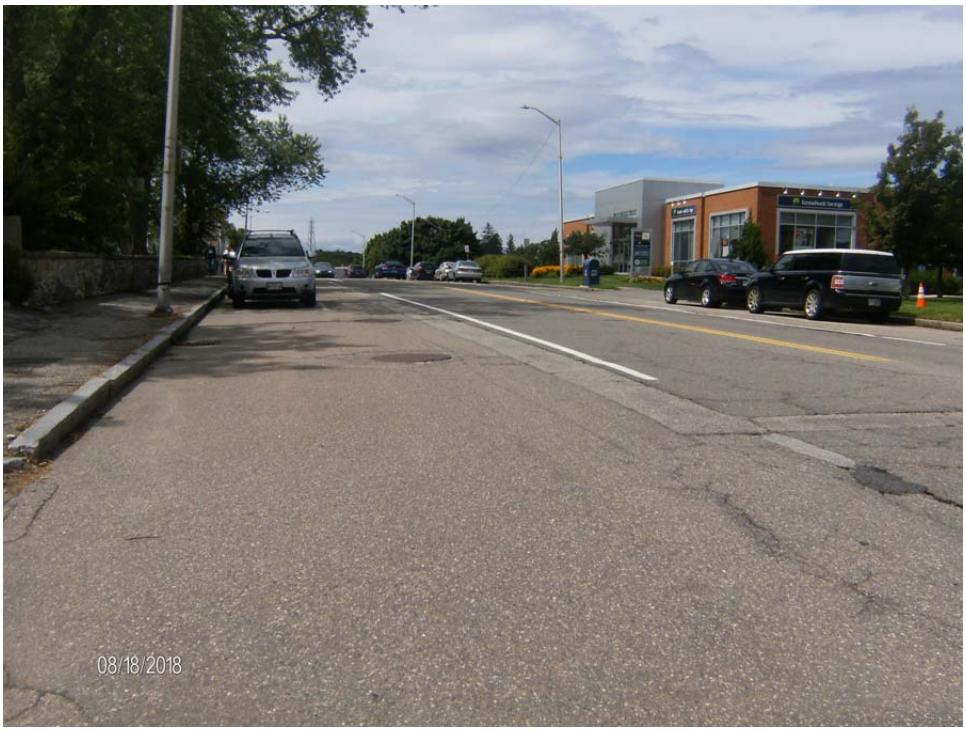
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	0	3	19	0	13	6	576	34	10	382	6
Future Vol, veh/h	5	0	3	19	0	13	6	576	34	10	382	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	2	-	-	-2	-
Peak Hour Factor	90	90	90	81	81	81	79	79	79	78	78	78
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	17	2	0
Mvmt Flow	6	0	3	23	0	16	8	729	43	13	490	8

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1295	1308	494	1289	1291	751	498	0	0	772	0	0
Stage 1	520	520	-	767	767	-	-	-	-	-	-	-
Stage 2	775	788	-	522	524	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.27	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.353	-	-
Pot Cap-1 Maneuver	141	161	579	142	165	414	1076	-	-	780	-	-
Stage 1	543	535	-	398	414	-	-	-	-	-	-	-
Stage 2	394	405	-	542	533	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	132	155	579	137	159	414	1076	-	-	780	-	-
Mov Cap-2 Maneuver	132	155	-	137	159	-	-	-	-	-	-	-
Stage 1	536	523	-	393	409	-	-	-	-	-	-	-
Stage 2	374	400	-	526	521	-	-	-	-	-	-	-

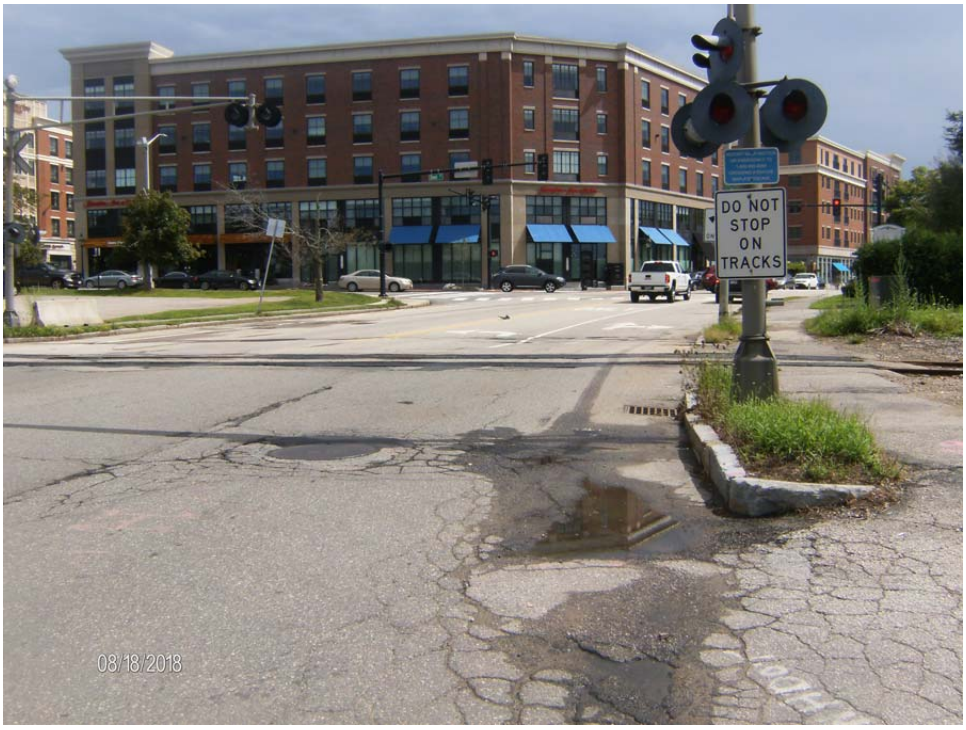
Approach	EB	WB	NB	SB
HCM Control Delay, s	25.3	29.2	0.1	0.2
HCM LOS	D	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1076	-	-	186	188	780	-	-
HCM Lane V/C Ratio	0.007	-	-	0.048	0.21	0.016	-	-
HCM Control Delay (s)	8.4	0	-	25.3	29.2	9.7	0	-
HCM Lane LOS	A	A	-	D	D	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.8	0.1	-	-

Looking Left



Looking Right



Looking Left

Looking Right