



Memorandum

To: Neil Cronin
City of Newton

Date: March 20, 2020

Project #: 10865.03

From: Randall C. Hart, Principal
Matthew Duranleau, EIT

Re: Grove Street at Woodland Road
Traffic Signal Warrant Memorandum
Riverside Redevelopment
Newton, Massachusetts

VHB has conducted a traffic signal warrant evaluation at the intersection of Grove Street and Woodland Road in Newton, Massachusetts. The warrant evaluation has been conducted due to a request from the City of Newton during the planning review process for the proposed redevelopment at Riverside Station. The proposed project at Riverside Station is expected to consist of approximately 1,025,000 square feet of new development including a mix of retail, office, residential, and hotel space in addition to maintaining the existing parking supply for commuters to the MBTA station. A Transportation Impact and Access Study (TIAS) was filed with the City of Newton in December 2019 and a revised trip generation memorandum was filed in February 2020.

This memorandum summarizes the evaluation of a traffic signal at the intersection of Grove Street at Woodland Road. The intersection is located approximately ½-mile north of the proposed Riverside redevelopment and will serve as one of the primary approaches to the Site from neighborhoods to the north and east in Newton. Therefore, the traffic signal warrant evaluation has been conducted with respect to the 2020 Existing, 2029 No Build, and 2029 Build Conditions.

Existing Conditions

Grove Street and Woodland Road currently intersect at an unsignalized four-way intersection under all-way stop control. Grove Street intersects from the north and south and Woodland Road intersects from the east and west. All approaches consist of one general-purpose lane and are under stop control. Stop signs are provided on the both sides of each approach and an overhead flashing-red beacon is also provided on each approach to supplement the signage. Sidewalks are provided on both sides of all approaches and crosswalks are located across each approach. Wheelchair ramps with tactile warning strips are provided on the approaches to each crosswalk. Land use around the intersection consists of Lasell College on the southeast corner, the United Parish Church of Auburndale on the northwest corner, and residential properties on the northeast and southwest corners. In addition, the Williams Elementary School is located on Grove Street approximately 400 feet south of the intersection.

Traffic Volumes

To conduct the traffic signal warrant analysis, traffic volumes were collected at the intersection of Grove Street and Woodland Road on Wednesday, March 11, 2020. Turning movement counts were conducted at the intersection for thirteen consecutive hours between 6:00 AM and 7:00 PM. The traffic count data is included in the Attachments to this memorandum.

To determine if the March 2020 traffic counts represent typical roadway conditions, the counts were compared against the June 2018 peak period turning movement counts conducted at this location for the December 2019 TIAS. Based on this comparison, the March 2020 traffic counts are approximately 7-percent lower during the weekday morning peak period and 16-percent lower during the weekday evening peak period than the June 2018 counts. This difference in traffic volumes is most likely because of the shutdowns caused by the COVID-19 outbreak in Massachusetts. While both Lasell College and Newton public schools were still open the day the traffic counts were conducted (March 11, 2020), general traffic patterns had already begun to be impacted by the shutdowns. Therefore,

to provide an accurate representation of average conditions at this intersection, the March 2020 traffic counts have been adjusted upward based on the comparison with the June 2018 counts. The volume comparison and adjustment calculations are included in the Attachments to this memorandum.

To be consistent with the analyses presented in the TIAS, a future year of 2029 was used to develop the No Build and Build Conditions. To develop the 2029 No Build Condition, the existing traffic volumes were grown using an annual growth rate of 0.5-percent and by applying volumes associated with the background projects presented in the TIAS. To develop the 2029 Build Condition, the daily distribution of Site-generated volumes was applied to the 2029 No Build Condition traffic volumes based on the Institute of Transportation Engineers (ITE) Trip Generation Manual¹. More details on the development of the No Build and Build Conditions are included in the Riverside redevelopment TIAS and the revised trip generation memorandum.

Traffic Signal Warrant Analysis

Federal Highway Administration (FHWA) has established criteria for evaluating the need for traffic signal control at an intersection. Several warrants, published in the Manual on Uniform Traffic Control Devices (MUTCD)², provide guidelines for determining the need for a signal based on such factors as traffic volume, pedestrian volume, progressive movement of traffic, vehicular delay, and others. While satisfaction of one or more of these warrants alone does not necessarily justify installation of a traffic signal, warrants in combination with capacity analysis, crash analysis, and a study of intersection safety provide valuable criteria for evaluating the need for a traffic signal.

There are nine warrants defined in the MUTCD. The warrants consider the roadway geometry, traffic volume entering the intersection, travel speeds, pedestrian activity, and special considerations such as proximity to schools and active railroad grade crossings. Even if these warrants are satisfied, other considerations such as traffic flow progression, sight distance, and physical constraints must be considered before pursuing traffic signal control.

Traffic volumes were evaluated for following three traffic volume-based warrants:

- **Warrant 1 (Eight Hour Vehicular Volume)** – Warrant 1 is based on any eight hours of a day where the traffic entering the intersection reaches a threshold that warrants considering signal control.
- **Warrant 2 (Four Hour Vehicular Volume)** – Warrant 2 is for any four hours of a day.
- **Warrant 3 (Peak Hour)** – Warrant 3 is for the peak hour of any given day.

As noted above, the signal warrant analyses were conducted based on the 2020 Existing, 2029 No Build, and 2029 Build Conditions. The signal warrant analyses were based on average 85th-percentile speeds of under 40 miles per hour on Grove Street and Woodland Road based on floating speed observations. Volume thresholds for warranting traffic signal controls are lower for roadways with 85th percentile speeds greater than 40 miles per hour compared to roadways with 85th percentile speeds lower than or equal to 40 miles per hour due to the higher travelling speeds for vehicles and the greater time and distances needed for a vehicle to come to a stop.

Table 1 presents the results of the three-traffic volume-based warrant analyses completed for this review at the intersection of Grove Street and Woodland Road. The signal warrant analyses worksheets are provided in the Attachments to this memorandum. It should be noted that to provide conservative analyses, the volumes used for the warrants include all left-turn, through, and right-turn movements on each approach.

¹ Trip Generation Manual, 10th Edition, Institute of Transportation Engineers, Washington D.C., 2017.

² Manual on Uniform Traffic Control Devices, 2009 Edition; U.S. Department of Transportation Federal Highway Administration, Washington DC, December 2009.

Table 1 Grove Street at Woodland Road Traffic Signal Warrants Analysis Summary

Condition	Warrant 1 Met? (Eight-Hour Volume Warrant)	Warrant 2 Met? (Four-Hour Volume Warrant)	Warrant 3 Met? (Peak-Hour Volume Warrant)
2020 Existing Conditions	No	No	No
2029 No Build Conditions	No	No	No
2029 Build Conditions	No	No	No

As shown in Table 1, none of the volume-based warrants are met at the intersection of Grove Street at Woodland Road under the 2020 Existing, 2029 No Build, or 2029 Build Conditions.

In addition to the three warrants described above, there are six other traffic signal warrants outlined in the MUTCD. While none of the six additional warrants are met at this intersection, the warrants are listed below with the reasoning why they do not apply at this location:

- **Warrant 4 (Pedestrian Volume)** – This warrant is not applicable as the current number of pedestrian crossings at this location does not meet the minimum number of crossings required to meet any of the cases for Warrant 4. The minimum threshold to meet this warrant is 107 people crossing per hour for four hours or 133 people crossing per hour for one hour. It is not anticipated that this warrant will be met in the future either as the total number of pedestrian crossings would need to more than double over four hours to meet Warrant 4, which is not anticipated due to the Riverside redevelopment.
- **Warrant 5 (School Crossing)** – While the intersection is close to the Williams Elementary School, this warrant is not applicable as there are currently adequate gaps in the traffic stream during the period when schoolchildren are crossing due to the all-way stop control nature of the intersection.
- **Warrant 6 (Coordinated Signal System)** – This warrant is not applicable as neither Grove Street nor Woodland Road currently contain an adjacent signalized intersection within 1,000 feet that could become part of a coordinated traffic signal system.
- **Warrant 7 (Crash Experience)** – Warrant 7 is satisfied when five collisions correctable by signalization occur over the most recent 12 months. A review of crash data determines that this warrant is not applicable as only one crash occurred at the study area intersection in 2017, the most recent full crash data is available from the Massachusetts Department of Transportation.
- **Warrant 8 (Roadway Network)** – This warrant is not applicable as the study intersection is not the common intersection of two major routes.
- **Warrant 9 (Intersection Near a Grade Crossing)** – This warrant is not applicable as the intersection is not near an active grade crossing.

Conclusion

VHB has conducted a traffic signal warrant evaluation at the intersection of Grove Street and Woodland Road. The traffic signal warrant evaluation was conducted with respect to the existing conditions and the future conditions with and without the proposed Riverside redevelopment project. Based on the analyses presented above, none of the three volume-based warrants or any of the other six warrants are met at this intersection. Therefore, a traffic signal is not currently warranted at the intersection of Grove Street and Woodland Road nor will it be warranted in the future.

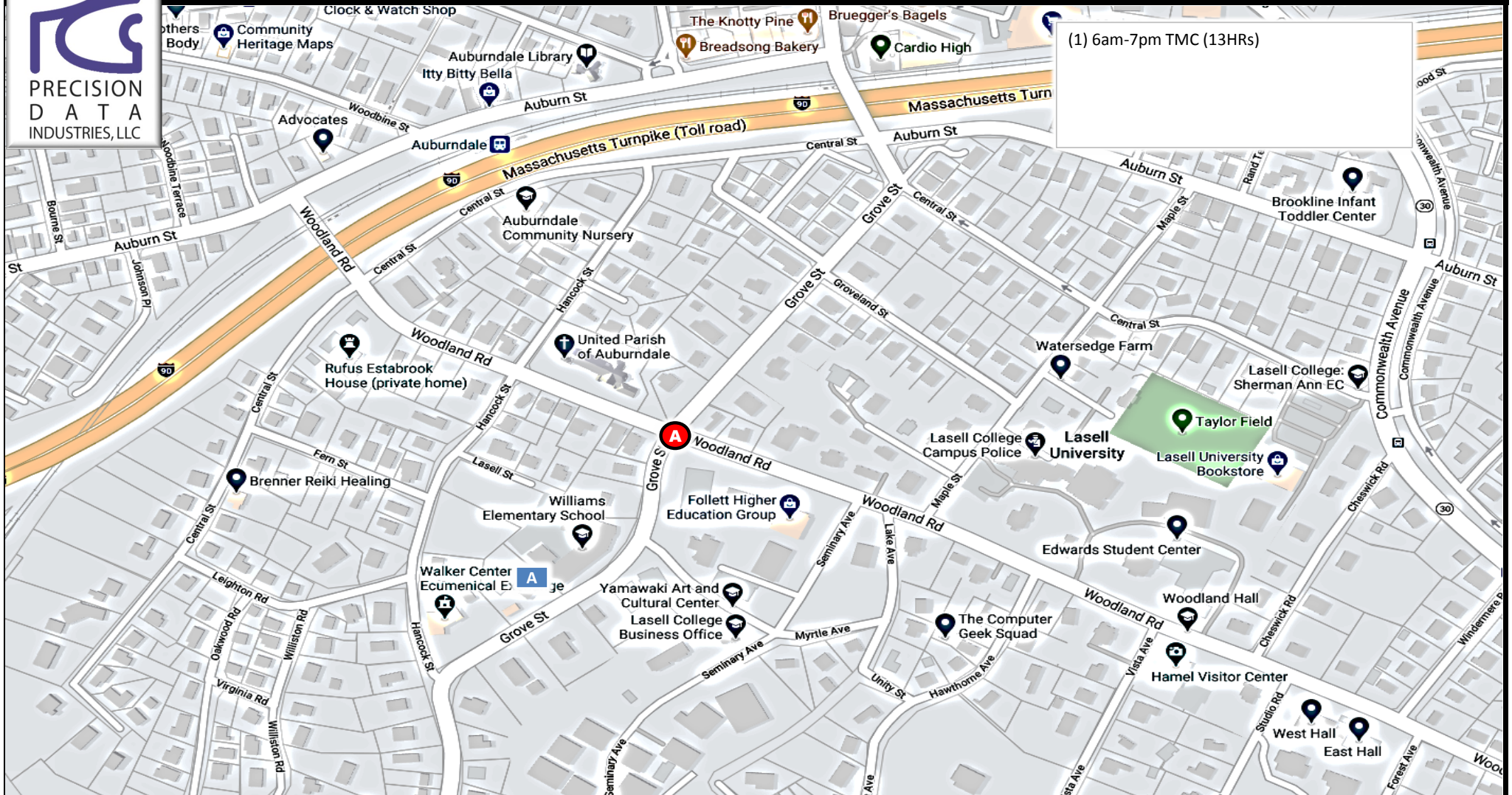
Attachments

- Traffic Count Data
- Existing Condition Traffic Volume Comparison
- Traffic Signal Warrant Analysis Worksheets



Location Map: 207519 Newton, MA

Precision Data Industries, LLC 46 Morton Street, Framingham, MA 01702 ph: 508-875-0100 email: datarequests@pdillc.com



(1) 6am-7pm TMC (13HRs)

Client: VHB	Engineer: M. Duranleau	Site Code: 10865.03	Date: Wed 3/11/2020	PDI Job # 207519	City, State: Newton, MA
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PDI File #: 207519 A
 Location: N: Grove Street S: Grove Street
 Location: E: Woodland Road W: Woodland Road
 City, State: Newton, MA
 Client: VHB/ M. Duranleau
 Site Code: 10865.03
 Count Date: Wednesday, March 11, 2020
 Start Time: 6:00 AM
 End Time: 7:00 PM
 Class:



46 Morton Street, Framingham, MA 01702
 Office: 508-875-0100 Fax: 508-875-0118
 Email: datarequests@pdilc.com

Cars and Heavy Vehicles (Combined)

	Grove Street					Woodland Road					Grove Street					Woodland Road					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
6:00 AM	0	18	4	0	22	0	2	4	0	6	0	28	1	0	29	1	3	0	0	4	61
6:15 AM	0	25	3	0	28	0	4	2	0	6	5	38	2	0	45	3	5	0	0	8	87
6:30 AM	0	22	1	0	23	1	4	3	0	8	7	57	1	0	65	1	13	0	0	14	110
6:45 AM	1	27	2	0	30	0	4	2	0	6	11	86	1	0	98	7	17	0	0	24	158
Total	1	92	10	0	103	1	14	11	0	26	23	209	5	0	237	12	38	0	0	50	416
7:00 AM	0	41	3	0	44	0	9	5	0	14	13	88	2	0	103	1	21	1	0	23	184
7:15 AM	0	42	6	0	48	4	5	10	0	19	20	96	3	0	119	4	34	0	0	38	224
7:30 AM	0	68	6	0	74	1	11	15	0	27	18	98	1	0	117	5	12	1	0	18	236
7:45 AM	0	66	4	0	70	3	9	18	0	30	11	85	6	0	102	12	24	1	0	37	239
Total	0	217	19	0	236	8	34	48	0	90	62	367	12	0	441	22	91	3	0	116	883
8:00 AM	0	78	6	0	84	3	12	23	0	38	19	78	1	0	98	14	30	0	0	44	264
8:15 AM	1	72	4	0	77	6	14	23	0	43	17	83	4	0	104	27	28	1	0	56	280
8:30 AM	0	66	4	0	70	5	28	25	0	58	9	98	0	0	107	6	21	2	0	29	264
8:45 AM	3	54	4	0	61	6	16	19	0	41	10	77	1	0	88	8	24	1	0	33	223
Total	4	270	18	0	292	20	70	90	0	180	55	336	6	0	397	55	103	4	0	162	1031
9:00 AM	0	61	9	0	70	7	22	21	0	50	14	67	4	0	85	8	17	1	0	26	231
9:15 AM	0	39	7	0	46	3	10	19	0	32	8	44	1	0	53	6	10	0	0	16	147
9:30 AM	1	34	1	0	36	5	4	12	0	21	10	58	4	0	72	6	8	2	0	16	145
9:45 AM	0	27	4	0	31	6	5	6	0	17	5	47	0	0	52	6	9	0	0	15	115
Total	1	161	21	0	183	21	41	58	0	120	37	216	9	0	262	26	44	3	0	73	638
10:00 AM	1	28	5	0	34	2	8	4	0	14	9	41	3	0	53	8	14	1	0	23	124
10:15 AM	1	20	5	0	26	6	3	5	0	14	10	55	1	0	66	7	8	0	0	15	121
10:30 AM	0	24	8	0	32	11	5	5	0	21	10	38	2	0	50	2	9	1	0	12	115
10:45 AM	0	29	2	0	31	11	7	6	0	24	9	43	2	0	54	8	9	0	0	17	126
Total	2	101	20	0	123	30	23	20	0	73	38	177	8	0	223	25	40	2	0	67	486
11:00 AM	4	26	2	0	32	3	3	6	0	12	5	34	3	0	42	6	8	1	0	15	101
11:15 AM	0	27	10	0	37	4	5	3	0	12	7	50	1	0	58	4	14	0	0	18	125
11:30 AM	1	25	8	0	34	2	6	4	0	12	6	47	0	0	53	3	13	1	0	17	116
11:45 AM	2	32	5	0	39	5	8	4	0	17	10	44	1	0	55	2	7	1	0	10	121
Total	7	110	25	0	142	14	22	17	0	53	28	175	5	0	208	15	42	3	0	60	463
12:00 PM	1	35	10	0	46	9	8	8	0	25	10	48	3	0	61	5	10	1	0	16	148
12:15 PM	2	34	6	0	42	16	14	12	0	42	9	50	3	0	62	6	10	0	0	16	162
12:30 PM	1	43	3	0	47	8	12	13	0	33	11	38	1	0	50	4	8	0	0	12	142
12:45 PM	2	35	7	0	44	3	9	7	0	19	4	48	0	0	52	1	16	1	0	18	133
Total	6	147	26	0	179	36	43	40	0	119	34	184	7	0	225	16	44	2	0	62	585
1:00 PM	0	43	6	0	49	8	13	8	0	29	4	38	0	0	42	6	14	2	0	22	142
1:15 PM	1	43	3	0	47	8	11	13	0	32	13	27	3	0	43	4	8	2	0	14	136
1:30 PM	0	36	12	0	48	7	12	6	0	25	6	40	2	0	48	3	13	0	0	16	137
1:45 PM	1	35	9	0	45	6	10	9	0	25	7	35	2	1	45	2	7	2	0	11	126
Total	2	157	30	0	189	29	46	36	0	111	30	140	7	1	178	15	42	6	0	63	541
2:00 PM	1	33	3	0	37	8	10	9	0	27	15	37	3	0	55	8	6	1	0	15	134
2:15 PM	0	45	6	0	51	6	12	6	0	24	8	46	5	0	59	6	14	2	0	22	156
2:30 PM	0	42	11	0	53	3	14	9	0	26	6	41	3	0	50	5	8	0	0	13	142
2:45 PM	2	54	2	0	58	11	11	11	0	33	4	47	1	0	52	5	12	1	0	18	161
Total	3	174	22	0	199	28	47	35	0	110	33	171	12	0	216	24	40	4	0	68	593
3:00 PM	1	57	5	0	63	8	9	18	0	35	9	58	2	0	69	15	19	2	0	36	203
3:15 PM	0	49	8	0	57	11	11	12	0	34	9	45	2	0	56	6	15	2	0	23	170
3:30 PM	2	64	6	0	72	7	16	9	0	32	9	54	6	0	69	7	15	1	0	23	196
3:45 PM	0	57	4	0	61	7	10	13	0	30	9	59	4	0	72	4	17	1	0	22	185
Total	3	227	23	0	253	33	46	52	0	131	36	216	14	0	266	32	66	6	0	104	754
4:00 PM	0	48	2	0	50	15	17	10	0	42	9	54	3	0	66	4	12	0	0	16	174
4:15 PM	1	52	0	0	53	6	17	7	0	30	4	53	2	0	59	5	12	1	0	18	160
4:30 PM	1	47	6	0	54	12	16	7	0	35	11	70	3	0	84	0	14	2	0	16	189
4:45 PM	1	51	6	0	58	9	14	17	0	40	11	67	3	0	81	3	21	0	0	24	203
Total	3	198	14	0	215	42	64	41	0	147	35	244	11	0	290	12	59	3	0	74	726
5:00 PM	3	66	6	0	75	2	18	6	0	26	14	74	2	0	90	2	21	2	0	25	216
5:15 PM	0	54	6	0	60	4	12	12	0	28	25	98	5	0	128	3	20	1	0	24	240
5:30 PM	1	64	5	0	70	2	17	11	0	30	24	74	4	0	102	4	24	0	0	28	230
5:45 PM	0	48	4	0	52	4	15	11	0	30	16	85	3	0	104	3	17	2	0	22	208
Total	4	232	21	0	257	12	62	40	0	114	79	331	14	0	424	12	82	5	0	99	894
6:00 PM	1	43	1	0	45	3	11	9	0	23	15	57	3	0	75	2	11	2	0	15	158
6:15 PM	0	28	5	0	33	5	9	11	0	25	11	65	1	0	77	1	14	4	0	19	154
6:30 PM	0	38	6	0	44	4	5	4	0	13	7	65	2	0	74	4	11	0	0	15	146
6:45 PM	0	34	11	0	45	6	12	7	0	25	5	53	3	0	61	2	13	0	0	15	146
Total	1	143	23	0	167	18	37	31	0	86	38	240	9	0	287	9	49	6	0	64	604
Grand Total	37	2229	272	0	2538	292	549	519	0	1360	528	3006	119	1	3654	275	740	47	0	1062	8614

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 Location: N: Grove Street S: Grove Street
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46 Morton Street, Framingham, MA 01702
 Office: 508-875-0100 Fax: 508-875-0118
 Email: datarequests@pdilc.com

Cars and Heavy Vehicles (Combined)

	Grove Street					Woodland Road					Grove Street					Woodland Road					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
Approach %	1.5	87.8	10.7	0.0		21.5	40.4	38.2	0.0		14.4	82.3	3.3	0.0		25.9	69.7	4.4	0.0		
Total %	0.4	25.9	3.2	0.0	29.5	3.4	6.4	6.0	0.0	15.8	6.1	34.9	1.4	0.0	42.4	3.2	8.6	0.5	0.0	12.3	
Exiting Leg Total	3345					1540					3024					705					8614
Cars	37	2164	263	0	2464	287	539	492	0	1318	494	2920	119	1	3534	267	724	46	0	1037	8353
% Cars	100.0	97.1	96.7	0.0	97.1	98.3	98.2	94.8	0.0	96.9	93.6	97.1	100.0	100.0	96.7	97.1	97.8	97.9	0.0	97.6	97.0
Exiting Leg Total	3253					1481					2924					695					8353
Heavy Vehicles	0	65	9	0	74	5	10	27	0	42	34	86	0	0	120	8	16	1	0	25	261
% Heavy Vehicles	0.0	2.9	3.3	0.0	2.9	1.7	1.8	5.2	0.0	3.1	6.4	2.9	0.0	0.0	3.3	2.9	2.2	2.1	0.0	2.4	3.0
Exiting Leg Total	92					59					100					10					261

AM Peak Hour Analysis from 06:00 AM to 10:00 AM begins at:

7:45 AM	Grove Street					Woodland Road					Grove Street					Woodland Road					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
7:45 AM	0	66	4	0	70	3	9	18	0	30	11	85	6	0	102	12	24	1	0	37	239
8:00 AM	0	78	6	0	84	3	12	23	0	38	19	78	1	0	98	14	30	0	0	44	264
8:15 AM	1	72	4	0	77	6	14	23	0	43	17	83	4	0	104	27	28	1	0	56	280
8:30 AM	0	66	4	0	70	5	28	25	0	58	9	98	0	0	107	6	21	2	0	29	264
Total Volume	1	282	18	0	301	17	63	89	0	169	56	344	11	0	411	59	103	4	0	166	1047
% Approach Total	0.3	93.7	6.0	0.0		10.1	37.3	52.7	0.0		13.6	83.7	2.7	0.0		35.5	62.0	2.4	0.0		
PHF	0.250	0.904	0.750	0.000	0.896	0.708	0.563	0.890	0.000	0.728	0.737	0.878	0.458	0.000	0.960	0.546	0.858	0.500	0.000	0.741	0.935
Cars	1	275	17	0	293	16	62	88	0	166	52	335	11	0	398	57	101	4	0	162	1019
Cars %	100.0	97.5	94.4	0.0	97.3	94.1	98.4	98.9	0.0	98.2	92.9	97.4	100.0	0.0	96.8	96.6	98.1	100.0	0.0	97.6	97.3
Heavy Vehicles	0	7	1	0	8	1	1	1	0	3	4	9	0	0	13	2	2	0	0	4	28
Heavy Vehicles %	0.0	2.5	5.6	0.0	2.7	5.9	1.6	1.1	0.0	1.8	7.1	2.6	0.0	0.0	3.2	3.4	1.9	0.0	0.0	2.4	2.7
Cars Enter Leg	1	275	17	0	293	16	62	88	0	166	52	335	11	0	398	57	101	4	0	162	1019
Heavy Enter Leg	0	7	1	0	8	1	1	1	0	3	4	9	0	0	13	2	2	0	0	4	28
Total Entering Leg	1	282	18	0	301	17	63	89	0	169	56	344	11	0	411	59	103	4	0	166	1047
Cars Exiting Leg	355					170					420					74					1019
Heavy Exiting Leg	10					7					10					1					28
Total Exiting Leg	365					177					430					75					1047

MidDay Peak Hour Analysis from 10:00 AM to 2:00 PM begins at:

12:00 PM	Grove Street					Woodland Road					Grove Street					Woodland Road					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
12:00 PM	1	35	10	0	46	9	8	8	0	25	10	48	3	0	61	5	10	1	0	16	148
12:15 PM	2	34	6	0	42	16	14	12	0	42	9	50	3	0	62	6	10	0	0	16	162
12:30 PM	1	43	3	0	47	8	12	13	0	33	11	38	1	0	50	4	8	0	0	12	142
12:45 PM	2	35	7	0	44	3	9	7	0	19	4	48	0	0	52	1	16	1	0	18	133
Total Volume	6	147	26	0	179	36	43	40	0	119	34	184	7	0	225	16	44	2	0	62	585
% Approach Total	3.4	82.1	14.5	0.0		30.3	36.1	33.6	0.0		15.1	81.8	3.1	0.0		25.8	71.0	3.2	0.0		
PHF	0.750	0.855	0.650	0.000	0.952	0.563	0.768	0.769	0.000	0.708	0.773	0.920	0.583	0.000	0.907	0.667	0.688	0.500	0.000	0.861	0.903
Cars	6	145	25	0	176	35	42	38	0	115	32	181	7	0	220	15	44	2	0	61	572
Cars %	100.0	98.6	96.2	0.0	98.3	97.2	97.7	95.0	0.0	96.6	94.1	98.4	100.0	0.0	97.8	93.8	100.0	100.0	0.0	98.4	97.8
Heavy Vehicles	0	2	1	0	3	1	1	2	0	4	2	3	0	0	5	1	0	0	0	1	13
Heavy Vehicles %	0.0	1.4	3.8	0.0	1.7	2.8	2.3	5.0	0.0	3.4	5.9	1.6	0.0	0.0	2.2	6.3	0.0	0.0	0.0	1.6	2.2
Cars Enter Leg	6	145	25	0	176	35	42	38	0	115	32	181	7	0	220	15	44	2	0	61	572
Heavy Enter Leg	0	2	1	0	3	1	1	2	0	4	2	3	0	0	5	1	0	0	0	1	13
Total Entering Leg	6	147	26	0	179	36	43	40	0	119	34	184	7	0	225	16	44	2	0	62	585
Cars Exiting Leg	218					101					198					55					572
Heavy Exiting Leg	4					3					5					1					13
Total Exiting Leg	222					104					203					56					585

PM Peak Hour Analysis from 2:00 PM to 07:00 PM begins at:

5:00 PM	Grove Street					Woodland Road					Grove Street					Woodland Road					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
5:00 PM	3	66	6	0	75	2	18	6	0	26	14	74	2	0	90	2	21	2	0	25	216
5:15 PM	0	54	6	0	60	4	12	12	0	28	25	98	5	0	128	3	20	1	0	24	240
5:30 PM	1	64	5	0	70	2	17	11	0	30	24	74	4	0	102	4	24	0	0	28	230
5:45 PM	0	48	4	0	52	4	15	11	0	30	16	85	3	0	104	3	17	2	0	22	208
Total Volume	4	232	21	0	257	12	62	40	0	114	79	331	14	0	424	12	82	5	0	99	894
% Approach Total	1.6	90.3	8.2	0.0		10.5	54.4	35.1	0.0		18.6	78.1	3.3	0.0		12.1	82.8	5.1	0.0		
PHF	0.333	0.879	0.875	0.000	0.857	0.750	0.861	0.833	0.000	0.950	0.790	0.844	0.700	0.000	0.828	0.750	0.854	0.625	0.000	0.884	0.931
Cars	4	227	21	0	252	11	62	38	0	111	77	327	14	0	418	12	82	5	0	99	880
Cars %	100.0	97.8	100.0	0.0	98.1	91.7	100.0	95.0	0.0	97.4	97.5	98.8	100.0	0.0	98.6	100.0	100.0	100.0	0.0	100.0	98.4
Heavy Vehicles	0	5	0	0	5	1	0	2	0	3	2	4	0	0	6	0	0	0	0	0	14

PDI File #: **207519 A**
 Location: **N: Grove Street S: Grove Street**
 Location: **E: Woodland Road W: Woodland Road**
 City, State: **Newton, MA**
 Client: **VHB/ M. Duranleau**
 Site Code: **10865.03**
 Count Date: **Wednesday, March 11, 2020**
 Start Time: **6:00 AM**
 End Time: **7:00 PM**
 Class:



**PRECISION
D A T A
INDUSTRIES, LLC**

46 Morton Street, Framingham, MA 01702
 Office: 508-875-0100 Fax: 508-875-0118
 Email: datarequests@pdilic.com

Cars and Heavy Vehicles (Combined)

	Grove Street					Woodland Road					Grove Street					Woodland Road					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
Heavy Vehicles %	0.0	2.2	0.0	0.0	1.9	8.3	0.0	5.0	0.0	2.6	2.5	1.2	0.0	0.0	1.4	0.0	0.0	0.0	0.0	0.0	1.6
Cars Enter Leg	4	227	21	0	252	11	62	38	0	111	77	327	14	0	418	12	82	5	0	99	880
Heavy Enter Leg	0	5	0	0	5	1	0	2	0	3	2	4	0	0	6	0	0	0	0	0	14
Total Entering Leg	4	232	21	0	257	12	62	40	0	114	79	331	14	0	424	12	82	5	0	99	894
Cars Exiting Leg					343					180					277					80	880
Heavy Exiting Leg					5					2					7					0	14
Total Exiting Leg					348					182					284					80	894

PDI File #: 207519 A
 Location: N: Grove Street S: Grove Street
 Location: E: Woodland Road W: Woodland Road
 City, State: Newton, MA
 Client: VHB/ M. Duranleau
 Site Code: 10865.03
 Count Date: Wednesday, March 11, 2020
 Start Time: 6:00 AM
 End Time: 7:00 PM
 Class:



46 Morton Street, Framingham, MA 01702
 Office: 508-875-0100 Fax: 508-875-0118
 Email: datarequests@pdilic.com

Cars

	Grove Street					Woodland Road					Grove Street					Woodland Road					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
6:00 AM	0	18	4	0	22	0	2	4	0	6	0	28	1	0	29	1	3	0	0	4	61
6:15 AM	0	23	3	0	26	0	3	2	0	5	5	36	2	0	43	3	4	0	0	7	81
6:30 AM	0	21	1	0	22	1	4	3	0	8	7	56	1	0	64	1	13	0	0	14	108
6:45 AM	1	26	2	0	29	0	4	2	0	6	10	86	1	0	97	7	16	0	0	23	155
Total	1	88	10	0	99	1	13	11	0	25	22	206	5	0	233	12	36	0	0	48	405
7:00 AM	0	40	3	0	43	0	9	5	0	14	12	87	2	0	101	1	20	1	0	22	180
7:15 AM	0	40	6	0	46	4	5	9	0	18	19	92	3	0	114	4	32	0	0	36	214
7:30 AM	0	64	6	0	70	1	10	14	0	25	17	97	1	0	115	5	12	1	0	18	228
7:45 AM	0	64	4	0	68	3	9	17	0	29	10	85	6	0	101	12	23	1	0	36	234
Total	0	208	19	0	227	8	33	45	0	86	58	361	12	0	431	22	87	3	0	112	856
8:00 AM	0	77	5	0	82	3	12	23	0	38	18	74	1	0	93	13	30	0	0	43	256
8:15 AM	1	71	4	0	76	5	14	23	0	42	16	80	4	0	100	26	27	1	0	54	272
8:30 AM	0	63	4	0	67	5	27	25	0	57	8	96	0	0	104	6	21	2	0	29	257
8:45 AM	3	53	3	0	59	6	15	18	0	39	10	73	1	0	84	8	22	1	0	31	213
Total	4	264	16	0	284	19	68	89	0	176	52	323	6	0	381	53	100	4	0	157	998
9:00 AM	0	60	9	0	69	7	21	20	0	48	13	63	4	0	80	8	17	1	0	26	223
9:15 AM	0	38	7	0	45	3	10	18	0	31	8	41	1	0	50	6	10	0	0	16	142
9:30 AM	1	32	1	0	34	5	4	12	0	21	9	55	4	0	68	6	8	2	0	16	139
9:45 AM	0	26	4	0	30	6	5	6	0	17	4	47	0	0	51	6	9	0	0	15	113
Total	1	156	21	0	178	21	40	56	0	117	34	206	9	0	249	26	44	3	0	73	617
10:00 AM	1	28	4	0	33	2	7	4	0	13	8	39	3	0	50	8	14	1	0	23	119
10:15 AM	1	20	5	0	26	5	3	3	0	11	10	52	1	0	63	6	8	0	0	14	114
10:30 AM	0	23	7	0	30	10	5	5	0	20	10	35	2	0	47	2	8	1	0	11	108
10:45 AM	0	29	2	0	31	11	7	6	0	24	7	41	2	0	50	8	9	0	0	17	122
Total	2	100	18	0	120	28	22	18	0	68	35	167	8	0	210	24	39	2	0	65	463
11:00 AM	4	25	2	0	31	3	3	6	0	12	5	30	3	0	38	5	8	0	0	13	94
11:15 AM	0	24	10	0	34	4	4	2	0	10	7	47	1	0	55	3	14	0	0	17	116
11:30 AM	1	24	8	0	33	2	6	3	0	11	5	45	0	0	50	3	13	1	0	17	111
11:45 AM	2	32	4	0	38	5	8	4	0	17	10	42	1	0	53	2	7	1	0	10	118
Total	7	105	24	0	136	14	21	15	0	50	27	164	5	0	196	13	42	2	0	57	439
12:00 PM	1	35	9	0	45	8	7	8	0	23	9	48	3	0	60	4	10	1	0	15	143
12:15 PM	2	34	6	0	42	16	14	11	0	41	9	48	3	0	60	6	10	0	0	16	159
12:30 PM	1	41	3	0	45	8	12	12	0	32	10	38	1	0	49	4	8	0	0	12	138
12:45 PM	2	35	7	0	44	3	9	7	0	19	4	47	0	0	51	1	16	1	0	18	132
Total	6	145	25	0	176	35	42	38	0	115	32	181	7	0	220	15	44	2	0	61	572
1:00 PM	0	41	6	0	47	8	11	8	0	27	2	37	0	0	39	6	13	2	0	21	134
1:15 PM	1	41	3	0	45	8	11	12	0	31	13	27	3	0	43	4	8	2	0	14	133
1:30 PM	0	36	12	0	48	7	12	6	0	25	5	38	2	0	45	3	13	0	0	16	134
1:45 PM	1	33	8	0	42	6	10	8	0	24	7	34	2	1	44	2	7	2	0	11	121
Total	2	151	29	0	182	29	44	34	0	107	27	136	7	1	171	15	41	6	0	62	522
2:00 PM	1	31	3	0	35	8	10	9	0	27	14	35	3	0	52	7	6	1	0	14	128
2:15 PM	0	41	6	0	47	6	12	5	0	23	7	46	5	0	58	5	14	2	0	21	149
2:30 PM	0	39	11	0	50	3	14	9	0	26	5	40	3	0	48	5	8	0	0	13	137
2:45 PM	2	53	2	0	57	11	11	10	0	32	4	45	1	0	50	5	12	1	0	18	157
Total	3	164	22	0	189	28	47	33	0	108	30	166	12	0	208	22	40	4	0	66	571
3:00 PM	1	56	5	0	62	8	9	17	0	34	8	56	2	0	66	15	19	2	0	36	198
3:15 PM	0	49	8	0	57	11	11	10	0	32	8	45	2	0	55	6	14	2	0	22	166
3:30 PM	2	63	6	0	71	7	16	7	0	30	8	54	6	0	68	7	15	1	0	23	192
3:45 PM	0	54	4	0	58	7	10	13	0	30	9	57	4	0	70	4	16	1	0	21	179
Total	3	222	23	0	248	33	46	47	0	126	33	212	14	0	259	32	64	6	0	102	735
4:00 PM	0	48	2	0	50	15	17	10	0	42	7	51	3	0	61	4	10	0	0	14	167
4:15 PM	1	51	0	0	52	6	17	6	0	29	3	53	2	0	58	5	12	1	0	18	157
4:30 PM	1	45	5	0	51	12	16	6	0	34	10	64	3	0	77	0	14	2	0	16	178
4:45 PM	1	48	6	0	55	9	14	16	0	39	11	65	3	0	79	3	21	0	0	24	197
Total	3	192	13	0	208	42	64	38	0	144	31	233	11	0	275	12	57	3	0	72	699
5:00 PM	3	64	6	0	73	2	18	6	0	26	13	74	2	0	89	2	21	2	0	25	213
5:15 PM	0	52	6	0	58	3	12	11	0	26	25	95	5	0	125	3	20	1	0	24	233
5:30 PM	1	63	5	0	69	2	17	10	0	29	23	74	4	0	101	4	24	0	0	28	227
5:45 PM	0	48	4	0	52	4	15	11	0	30	16	84	3	0	103	3	17	2	0	22	207
Total	4	227	21	0	252	11	62	38	0	111	77	327	14	0	418	12	82	5	0	99	880
6:00 PM	1	43	1	0	45	3	11	9	0	23	14	57	3	0	74	2	11	2	0	15	157
6:15 PM	0	28	4	0	32	5	9	11	0	25	11	64	1	0	76	1	13	4	0	18	151
6:30 PM	0	37	6	0	43	4	5	4	0	13	6	64	2	0	72	4	11	0	0	15	143
6:45 PM	0	34	11	0	45	6	12	6	0	24	5	53	3	0	61	2	13	0	0	15	145
Total	1	142	22	0	165	18	37	30	0	85	36	238	9	0	283	9	48	6	0	63	596

PDI File #: 207519 A
 Location: N: Grove Street S: Grove Street
 Location: E: Woodland Road W: Woodland Road
 City, State: Newton, MA
 Client: VHB/ M. Duranleau
 Site Code: 10865.03
 Count Date: Wednesday, March 11, 2020
 Start Time: 6:00 AM
 End Time: 7:00 PM
 Class:



46 Morton Street, Framingham, MA 01702
 Office: 508-875-0100 Fax: 508-875-0118
 Email: datarequests@pdilic.com

Cars

	Grove Street					Woodland Road					Grove Street					Woodland Road					Total	
	from North					from East					from South					from West						
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total		
Grand Total	37	2164	263	0	2464	287	539	492	0	1318	494	2920	119	1	3534	267	724	46	0	1037	8353	
Approach %	1.5	87.8	10.7	0.0		21.8	40.9	37.3	0.0		14.0	82.6	3.4	0.0		25.7	69.8	4.4	0.0			
Total %	0.4	25.9	3.1	0.0	29.5	3.4	6.5	5.9	0.0	15.8	5.9	35.0	1.4	0.0	42.3	3.2	8.7	0.6	0.0	12.4		
Exiting Leg Total						3253					1481					2924					695	8353

AM Peak Hour Analysis from 06:00 AM to 10:00 AM begins at:

7:45 AM	Grove Street					Woodland Road					Grove Street					Woodland Road					Total	
	from North					from East					from South					from West						
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total		
7:45 AM	0	64	4	0	68	3	9	17	0	29	10	85	6	0	101	12	23	1	0	36	234	
8:00 AM	0	77	5	0	82	3	12	23	0	38	18	74	1	0	93	13	30	0	0	43	256	
8:15 AM	1	71	4	0	76	5	14	23	0	42	16	80	4	0	100	26	27	1	0	54	272	
8:30 AM	0	63	4	0	67	5	27	25	0	57	8	96	0	0	104	6	21	2	0	29	257	
Total Volume	1	275	17	0	293	16	62	88	0	166	52	335	11	0	398	57	101	4	0	162	1019	
% Approach Total	0.3	93.9	5.8	0.0		9.6	37.3	53.0	0.0		13.1	84.2	2.8	0.0		35.2	62.3	2.5	0.0			
PHF	0.250	0.893	0.850	0.000	0.893	0.800	0.574	0.880	0.000	0.728	0.722	0.872	0.458	0.000	0.957	0.548	0.842	0.500	0.000	0.750	0.937	
Entering Leg	1	275	17	0	293	16	62	88	0	166	52	335	11	0	398	57	101	4	0	162	1019	
Exiting Leg						355					170					420					74	1019
Total						648					336					818					236	2038

MidDay Peak Hour Analysis from 10:00 AM to 2:00 PM begins at:

12:00 PM	Grove Street					Woodland Road					Grove Street					Woodland Road					Total	
	from North					from East					from South					from West						
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total		
12:00 PM	1	35	9	0	45	8	7	8	0	23	9	48	3	0	60	4	10	1	0	15	143	
12:15 PM	2	34	6	0	42	16	14	11	0	41	9	48	3	0	60	6	10	0	0	16	159	
12:30 PM	1	41	3	0	45	8	12	12	0	32	10	38	1	0	49	4	8	0	0	12	138	
12:45 PM	2	35	7	0	44	3	9	7	0	19	4	47	0	0	51	1	16	1	0	18	132	
Total Volume	6	145	25	0	176	35	42	38	0	115	32	181	7	0	220	15	44	2	0	61	572	
% Approach Total	3.4	82.4	14.2	0.0		30.4	36.5	33.0	0.0		14.5	82.3	3.2	0.0		24.6	72.1	3.3	0.0			
PHF	0.750	0.884	0.694	0.000	0.978	0.547	0.750	0.792	0.000	0.701	0.800	0.943	0.583	0.000	0.917	0.625	0.688	0.500	0.000	0.847	0.899	
Entering Leg	6	145	25	0	176	35	42	38	0	115	32	181	7	0	220	15	44	2	0	61	572	
Exiting Leg						218					101					198					55	572
Total						394					216					418					116	1144

PM Peak Hour Analysis from 2:00 PM to 07:00 PM begins at:

5:00 PM	Grove Street					Woodland Road					Grove Street					Woodland Road					Total	
	from North					from East					from South					from West						
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total		
5:00 PM	3	64	6	0	73	2	18	6	0	26	13	74	2	0	89	2	21	2	0	25	213	
5:15 PM	0	52	6	0	58	3	12	11	0	26	25	95	5	0	125	3	20	1	0	24	233	
5:30 PM	1	63	5	0	69	2	17	10	0	29	23	74	4	0	101	4	24	0	0	28	227	
5:45 PM	0	48	4	0	52	4	15	11	0	30	16	84	3	0	103	3	17	2	0	22	207	
Total Volume	4	227	21	0	252	11	62	38	0	111	77	327	14	0	418	12	82	5	0	99	880	
% Approach Total	1.6	90.1	8.3	0.0		9.9	55.9	34.2	0.0		18.4	78.2	3.3	0.0		12.1	82.8	5.1	0.0			
PHF	0.333	0.887	0.875	0.000	0.863	0.688	0.861	0.864	0.000	0.925	0.770	0.861	0.700	0.000	0.836	0.750	0.854	0.625	0.000	0.884	0.944	
Entering Leg	4	227	21	0	252	11	62	38	0	111	77	327	14	0	418	12	82	5	0	99	880	
Exiting Leg						343					180					277					80	880
Total						595					291					695					179	1760

PDI File #: 207519 A
 Location: N: Grove Street S: Grove Street
 Location: E: Woodland Road W: Woodland Road
 City, State: Newton, MA
 Client: VHB/ M. Duranleau
 Site Code: 10865.03
 Count Date: Wednesday, March 11, 2020
 Start Time: 6:00 AM
 End Time: 7:00 PM



Class:

Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)

	Grove Street					Woodland Road					Grove Street					Woodland Road					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 AM	0	2	0	0	2	0	1	0	0	1	0	2	0	0	2	0	1	0	0	1	6
6:30 AM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
6:45 AM	0	1	0	0	1	0	0	0	0	0	1	0	0	0	1	0	1	0	0	1	3
Total	0	4	0	0	4	0	1	0	0	1	1	3	0	0	4	0	2	0	0	2	11
7:00 AM	0	1	0	0	1	0	0	0	0	0	1	1	0	0	2	0	1	0	0	1	4
7:15 AM	0	2	0	0	2	0	0	1	0	1	1	4	0	0	5	0	2	0	0	2	10
7:30 AM	0	4	0	0	4	0	1	1	0	2	1	1	0	0	2	0	0	0	0	0	8
7:45 AM	0	2	0	0	2	0	0	1	0	1	1	0	0	0	1	0	1	0	0	1	5
Total	0	9	0	0	9	0	1	3	0	4	4	6	0	0	10	0	4	0	0	4	27
8:00 AM	0	1	1	0	2	0	0	0	0	0	1	4	0	0	5	1	0	0	0	1	8
8:15 AM	0	1	0	0	1	1	0	0	0	1	1	3	0	0	4	1	1	0	0	2	8
8:30 AM	0	3	0	0	3	0	1	0	0	1	1	2	0	0	3	0	0	0	0	0	7
8:45 AM	0	1	1	0	2	0	1	1	0	2	0	4	0	0	4	0	2	0	0	2	10
Total	0	6	2	0	8	1	2	1	0	4	3	13	0	0	16	2	3	0	0	5	33
9:00 AM	0	1	0	0	1	0	1	1	0	2	1	4	0	0	5	0	0	0	0	0	8
9:15 AM	0	1	0	0	1	0	0	1	0	1	0	3	0	0	3	0	0	0	0	0	5
9:30 AM	0	2	0	0	2	0	0	0	0	0	1	3	0	0	4	0	0	0	0	0	6
9:45 AM	0	1	0	0	1	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	2
Total	0	5	0	0	5	0	1	2	0	3	3	10	0	0	13	0	0	0	0	0	21
10:00 AM	0	0	1	0	1	0	1	0	0	1	1	2	0	0	3	0	0	0	0	0	5
10:15 AM	0	0	0	0	0	1	0	2	0	3	0	3	0	0	3	1	0	0	0	1	7
10:30 AM	0	1	1	0	2	1	0	0	0	1	0	3	0	0	3	0	1	0	0	1	7
10:45 AM	0	0	0	0	0	0	0	0	0	0	2	2	0	0	4	0	0	0	0	0	4
Total	0	1	2	0	3	2	1	2	0	5	3	10	0	0	13	1	1	0	0	2	23
11:00 AM	0	1	0	0	1	0	0	0	0	0	0	4	0	0	4	1	0	1	0	2	7
11:15 AM	0	3	0	0	3	0	1	1	0	2	0	3	0	0	3	1	0	0	0	1	9
11:30 AM	0	1	0	0	1	0	0	1	0	1	1	2	0	0	3	0	0	0	0	0	5
11:45 AM	0	0	1	0	1	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	3
Total	0	5	1	0	6	0	1	2	0	3	1	11	0	0	12	2	0	1	0	3	24
12:00 PM	0	0	1	0	1	1	1	0	0	2	1	0	0	0	1	1	0	0	0	1	5
12:15 PM	0	0	0	0	0	0	0	1	0	1	0	2	0	0	2	0	0	0	0	0	3
12:30 PM	0	2	0	0	2	0	0	1	0	1	1	0	0	0	1	0	0	0	0	0	4
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
Total	0	2	1	0	3	1	1	2	0	4	2	3	0	0	5	1	0	0	0	1	13
1:00 PM	0	2	0	0	2	0	2	0	0	2	2	1	0	0	3	0	1	0	0	1	8
1:15 PM	0	2	0	0	2	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	3
1:30 PM	0	0	0	0	0	0	0	0	0	0	1	2	0	0	3	0	0	0	0	0	3
1:45 PM	0	2	1	0	3	0	0	1	0	1	0	1	0	0	1	0	0	0	0	0	5
Total	0	6	1	0	7	0	2	2	0	4	3	4	0	0	7	0	1	0	0	1	19
2:00 PM	0	2	0	0	2	0	0	0	0	0	1	2	0	0	3	1	0	0	0	1	6
2:15 PM	0	4	0	0	4	0	0	1	0	1	1	0	0	0	1	1	0	0	0	1	7
2:30 PM	0	3	0	0	3	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	5
2:45 PM	0	1	0	0	1	0	0	1	0	1	0	2	0	0	2	0	0	0	0	0	4
Total	0	10	0	0	10	0	0	2	0	2	3	5	0	0	8	2	0	0	0	2	22
3:00 PM	0	1	0	0	1	0	0	1	0	1	1	2	0	0	3	0	0	0	0	0	5
3:15 PM	0	0	0	0	0	0	0	2	0	2	1	0	0	0	1	0	1	0	0	1	4
3:30 PM	0	1	0	0	1	0	0	2	0	2	1	0	0	0	1	0	0	0	0	0	4
3:45 PM	0	3	0	0	3	0	0	0	0	0	0	2	0	0	2	0	1	0	0	1	6
Total	0	5	0	0	5	0	0	5	0	5	3	4	0	0	7	0	2	0	0	2	19
4:00 PM	0	0	0	0	0	0	0	0	0	0	2	3	0	0	5	0	2	0	0	2	7
4:15 PM	0	1	0	0	1	0	0	1	0	1	1	0	0	0	1	0	0	0	0	0	3
4:30 PM	0	2	1	0	3	0	0	1	0	1	1	6	0	0	7	0	0	0	0	0	11
4:45 PM	0	3	0	0	3	0	0	1	0	1	0	2	0	0	2	0	0	0	0	0	6
Total	0	6	1	0	7	0	0	3	0	3	4	11	0	0	15	0	2	0	0	2	27
5:00 PM	0	2	0	0	2	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	3
5:15 PM	0	2	0	0	2	1	0	1	0	2	0	3	0	0	3	0	0	0	0	0	7
5:30 PM	0	1	0	0	1	0	0	1	0	1	1	0	0	0	1	0	0	0	0	0	3
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
Total	0	5	0	0	5	1	0	2	0	3	2	4	0	0	6	0	0	0	0	0	14
6:00 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	1
6:15 PM	0	0	1	0	1	0	0	0	0	0	0	1	0	0	1	0	1	0	0	1	3
6:30 PM	0	1	0	0	1	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	3
6:45 PM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
Total	0	1	1	0	2	0	0	1	0	1	2	2	0	0	4	0	1	0	0	1	8
Grand Total	0	65	9	0	74	5	10	27	0	42	34	86	0	0	120	8	16	1	0	25	261

PDI File #: 207519 A
 Location: N: Grove Street S: Grove Street
 Location: E: Woodland Road W: Woodland Road
 City, State: Newton, MA
 Client: VHB/ M. Duranleau
 Site Code: 10865.03
 Count Date: Wednesday, March 11, 2020
 Start Time: 6:00 AM
 End Time: 7:00 PM



46 Morton Street, Framingham, MA 01702
 Office: 508-875-0100 Fax: 508-875-0118
 Email: datarequests@pdilic.com

Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)

	Grove Street					Woodland Road					Grove Street					Woodland Road					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
Approach %	0.0	87.8	12.2	0.0		11.9	23.8	64.3	0.0		28.3	71.7	0.0	0.0		32.0	64.0	4.0	0.0		
Total %	0.0	24.9	3.4	0.0	28.4	1.9	3.8	10.3	0.0	16.1	13.0	33.0	0.0	0.0	46.0	3.1	6.1	0.4	0.0	9.6	
Exiting Leg Total	92					59					100					10					261
Buses	0	15	1	0	16	1	2	19	0	22	27	12	0	0	39	2	8	0	0	10	87
% Buses	0.0	23.1	11.1	0.0	21.6	20.0	20.0	70.4	0.0	52.4	79.4	14.0	0.0	0.0	32.5	25.0	50.0	0.0	0.0	40.0	33.3
Exiting Leg Total	13					36					36					2					87
Single-Unit Trucks	0	44	8	0	52	3	8	8	0	19	7	59	0	0	66	6	7	1	0	14	151
% Single-Unit	0.0	67.7	88.9	0.0	70.3	60.0	80.0	29.6	0.0	45.2	20.6	68.6	0.0	0.0	55.0	75.0	43.8	100.0	0.0	56.0	57.9
Exiting Leg Total	63					22					58					8					151
Articulated Trucks	0	6	0	0	6	1	0	0	0	1	0	15	0	0	15	0	1	0	0	1	23
% Articulated	0.0	9.2	0.0	0.0	8.1	20.0	0.0	0.0	0.0	2.4	0.0	17.4	0.0	0.0	12.5	0.0	6.3	0.0	0.0	4.0	8.8
Exiting Leg Total	16					1					6					0					23

AM Peak Hour Analysis from 06:00 AM to 10:00 AM begins at:

8:00 AM	Grove Street					Woodland Road					Grove Street					Woodland Road					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
8:00 AM	0	1	1	0	2	0	0	0	0	0	1	4	0	0	5	1	0	0	0	1	8
8:15 AM	0	1	0	0	1	1	0	0	0	1	1	3	0	0	4	1	1	0	0	2	8
8:30 AM	0	3	0	0	3	0	1	0	0	1	1	2	0	0	3	0	0	0	0	0	7
8:45 AM	0	1	1	0	2	0	1	1	0	2	0	4	0	0	4	0	2	0	0	2	10
Total Volume	0	6	2	0	8	1	2	1	0	4	3	13	0	0	16	2	3	0	0	5	33
% Approach Total	0.0	75.0	25.0	0.0		25.0	50.0	25.0	0.0		18.8	81.3	0.0	0.0		40.0	60.0	0.0	0.0		
PHF	0.000	0.500	0.500	0.000	0.667	0.250	0.500	0.250	0.000	0.500	0.750	0.813	0.000	0.000	0.800	0.500	0.375	0.000	0.000	0.625	0.825
Buses	0	0	0	0	0	1	0	0	0	1	2	1	0	0	3	2	2	0	0	4	8
Buses %	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	25.0	66.7	7.7	0.0	0.0	18.8	100.0	66.7	0.0	0.0	80.0	24.2
Single-Unit Trucks	0	4	2	0	6	0	2	1	0	3	1	7	0	0	8	0	1	0	0	1	18
Single-Unit %	0.0	66.7	100.0	0.0	75.0	0.0	100.0	100.0	0.0	75.0	33.3	53.8	0.0	0.0	50.0	0.0	33.3	0.0	0.0	20.0	54.5
Articulated Trucks	0	2	0	0	2	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	7
Articulated %	0.0	33.3	0.0	0.0	25.0	0.0	0.0	0.0	0.0	0.0	0.0	38.5	0.0	0.0	31.3	0.0	0.0	0.0	0.0	0.0	21.2
Buses	0	0	0	0	0	1	0	0	0	1	2	1	0	0	3	2	2	0	0	4	8
Single-Unit Trucks	0	4	2	0	6	0	2	1	0	3	1	7	0	0	8	0	1	0	0	1	18
Articulated Trucks	0	2	0	0	2	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	7
Total Entering Leg	0	6	2	0	8	1	2	1	0	4	3	13	0	0	16	2	3	0	0	5	33
Buses	2					4					2					0					8
Single-Unit Trucks	7					4					5					2					18
Articulated Trucks	5					0					2					0					7
Total Exiting Leg	14					8					9					2					33

MidDay Peak Hour Analysis from 10:00 AM to 2:00 PM begins at:

10:30 AM	Grove Street					Woodland Road					Grove Street					Woodland Road					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
10:30 AM	0	1	1	0	2	1	0	0	0	1	0	3	0	0	3	0	1	0	0	1	7
10:45 AM	0	0	0	0	0	0	0	0	0	0	2	2	0	0	4	0	0	0	0	0	4
11:00 AM	0	1	0	0	1	0	0	0	0	0	0	4	0	0	4	1	0	1	0	2	7
11:15 AM	0	3	0	0	3	0	1	1	0	2	0	3	0	0	3	1	0	0	0	1	9
Total Volume	0	5	1	0	6	1	1	1	0	3	2	12	0	0	14	2	1	1	0	4	27
% Approach Total	0.0	83.3	16.7	0.0		33.3	33.3	33.3	0.0		14.3	85.7	0.0	0.0		50.0	25.0	25.0	0.0		
PHF	0.000	0.417	0.250	0.000	0.500	0.250	0.250	0.250	0.000	0.375	0.250	0.750	0.000	0.000	0.875	0.500	0.250	0.250	0.000	0.500	0.750
Buses	0	1	0	0	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	2
Buses %	0.0	20.0	0.0	0.0	16.7	0.0	0.0	100.0	0.0	33.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.4
Single-Unit Trucks	0	4	1	0	5	1	1	0	0	2	2	11	0	0	13	2	0	1	0	3	23
Single-Unit %	0.0	80.0	100.0	0.0	83.3	100.0	100.0	0.0	0.0	66.7	100.0	91.7	0.0	0.0	92.9	100.0	0.0	100.0	0.0	75.0	85.2
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	0	1	2
Articulated %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.3	0.0	0.0	7.1	0.0	100.0	0.0	0.0	25.0	7.4
Buses	0	1	0	0	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	2
Single-Unit Trucks	0	4	1	0	5	1	1	0	0	2	2	11	0	0	13	2	0	1	0	3	23
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	0	1	2
Total Entering Leg	0	5	1	0	6	1	1	1	0	3	2	12	0	0	14	2	1	1	0	4	27
Buses	0					0					2					0					2
Single-Unit Trucks	13					3					6					1					23
Articulated Trucks	1					0					0					0					2
Total Exiting Leg	14					4					8					1					27

PM Peak Hour Analysis from 2:00 PM to 07:00 PM begins at:

3:45 PM	Grove Street	Woodland Road	Grove Street	Woodland Road
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PDI File #: 207519 A
 Location: N: Grove Street S: Grove Street
 Location: E: Woodland Road W: Woodland Road
 City, State: Newton, MA
 Client: VHB/ M. Duranleau
 Site Code: 10865.03
 Count Date: Wednesday, March 11, 2020
 Start Time: 6:00 AM
 End Time: 7:00 PM



Class: **Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)**

	Grove Street					Woodland Road					Grove Street					Woodland Road					Total			
	from North					from East					from South					from West								
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total				
	from North					from East					from South					from West								
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total			
3:45 PM	0	3	0	0	3	0	0	0	0	0	0	2	0	0	2	0	1	0	0	0	1	6		
4:00 PM	0	0	0	0	0	0	0	0	0	0	2	3	0	0	5	0	2	0	0	0	2	7		
4:15 PM	0	1	0	0	1	0	0	1	0	1	1	0	0	0	1	0	0	0	0	0	0	3		
4:30 PM	0	2	1	0	3	0	0	1	0	1	1	6	0	0	7	0	0	0	0	0	0	11		
Total Volume	0	6	1	0	7	0	0	2	0	2	4	11	0	0	15	0	3	0	0	0	3	27		
% Approach Total	0.0	85.7	14.3	0.0		0.0	0.0	100.0	0.0		26.7	73.3	0.0	0.0		0.0	100.0	0.0	0.0					
PHF	0.000	0.500	0.250	0.000	0.583	0.000	0.000	0.500	0.000	0.500	0.500	0.458	0.000	0.000	0.536	0.000	0.375	0.000	0.000	0.375	0.614			
Buses	0	1	1	0	2	0	0	2	0	2	4	2	0	0	6	0	2	0	0	0	2	12		
Buses %	0.0	16.7	100.0	0.0	28.6	0.0	0.0	100.0	0.0	100.0	100.0	18.2	0.0	0.0	40.0	0.0	66.7	0.0	0.0	66.7	44.4			
Single-Unit Trucks	0	5	0	0	5	0	0	0	0	0	0	6	0	0	6	0	1	0	0	0	1	12		
Single-Unit %	0.0	83.3	0.0	0.0	71.4	0.0	0.0	0.0	0.0	0.0	0.0	54.5	0.0	0.0	40.0	0.0	33.3	0.0	0.0	33.3	44.4			
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	3		
Articulated %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	27.3	0.0	0.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	11.1		
Buses	0	1	1	0	2	0	0	2	0	2	4	2	0	0	6	0	2	0	0	0	2	12		
Single-Unit Trucks	0	5	0	0	5	0	0	0	0	0	0	6	0	0	6	0	1	0	0	0	1	12		
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	3		
Total Entering Leg	0	6	1	0	7	0	0	2	0	2	4	11	0	0	15	0	3	0	0	0	3	27		
Buses																					2	0	12	
Single-Unit Trucks																					6	1	0	12
Articulated Trucks																					3	0	0	3
Total Exiting Leg																					11	8	0	27

PDI File #: 207519 A
 Location: N: Grove Street S: Grove Street
 Location: E: Woodland Road W: Woodland Road
 City, State: Newton, MA
 Client: VHB/ M. Duranleau
 Site Code: 10865.03
 Count Date: Wednesday, March 11, 2020
 Start Time: 6:00 AM
 End Time: 7:00 PM
 Class:



Buses

	Grove Street					Woodland Road					Grove Street					Woodland Road					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 AM	0	2	0	0	2	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	3
6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 AM	0	1	0	0	1	0	0	0	0	0	1	0	0	0	1	0	1	0	0	1	3
Total	0	3	0	0	3	0	0	0	0	0	1	1	0	0	2	0	1	0	0	1	6
7:00 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	1	0	0	1	2
7:15 AM	0	0	0	0	0	0	0	1	0	1	0	2	0	0	2	0	0	0	0	0	3
7:30 AM	0	0	0	0	0	0	1	1	0	2	1	0	0	0	1	0	0	0	0	0	3
7:45 AM	0	1	0	0	1	0	0	1	0	1	1	0	0	0	1	0	1	0	0	1	4
Total	0	1	0	0	1	0	1	3	0	4	3	2	0	0	5	0	2	0	0	2	12
8:00 AM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2	1	0	0	0	1	3
8:15 AM	0	0	0	0	0	1	0	0	0	1	0	0	0	0	1	1	1	0	0	2	3
8:30 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	1
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
Total	0	0	0	0	0	1	0	0	0	1	2	1	0	0	3	2	2	0	0	4	8
9:00 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	1
9:15 AM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
9:30 AM	0	1	0	0	1	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	3
9:45 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	2	0	0	2	0	0	1	0	1	2	1	0	0	3	0	0	0	0	0	6
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	1	0	0	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	2
11:30 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	1
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	0	1	0	0	1	0	1	1	0	0	0	1	0	0	0	0	0	3
12:00 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	1
12:15 PM	0	0	0	0	0	0	0	1	0	1	0	1	0	0	1	0	0	0	0	0	2
12:30 PM	0	0	0	0	0	0	0	1	0	1	1	0	0	0	1	0	0	0	0	0	2
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	2	0	2	2	1	0	0	3	0	0	0	0	0	5
1:00 PM	0	0	0	0	0	0	1	0	0	1	2	0	0	0	2	0	0	0	0	0	3
1:15 PM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
1:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	1
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	1	1	0	2	3	0	0	0	3	0	0	0	0	0	5
2:00 PM	0	1	0	0	1	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	3
2:15 PM	0	2	0	0	2	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	3
2:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	1
2:45 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	4	0	0	4	0	0	1	0	1	2	1	0	0	3	0	0	0	0	0	8
3:00 PM	0	1	0	0	1	0	0	1	0	1	1	0	0	0	1	0	0	0	0	0	3
3:15 PM	0	0	0	0	0	0	0	2	0	2	1	0	0	0	1	0	1	0	0	1	4
3:30 PM	0	1	0	0	1	0	0	1	0	1	1	0	0	0	1	0	0	0	0	0	3
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	2	0	0	2	0	0	4	0	4	3	0	0	0	3	0	1	0	0	1	10
4:00 PM	0	0	0	0	0	0	0	0	0	0	2	1	0	0	3	0	2	0	0	2	5
4:15 PM	0	0	0	0	0	0	0	1	0	1	1	0	0	0	1	0	0	0	0	0	2
4:30 PM	0	1	1	0	2	0	0	1	0	1	1	1	0	0	2	0	0	0	0	0	5
4:45 PM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
Total	0	2	1	0	3	0	0	2	0	2	4	3	0	0	7	0	2	0	0	2	14
5:00 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	1
5:15 PM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
5:30 PM	0	0	0	0	0	0	0	1	0	1	1	0	0	0	1	0	0	0	0	0	2
5:45 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	0	0	0	0	0	2	0	2	2	1	0	0	3	0	0	0	0	0	5
6:00 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	1
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
6:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	1
6:45 PM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
Total	0	0	0	0	0	0	0	1	0	1	2	1	0	0	3	0	0	0	0	0	4

PDI File #: 207519 A
 Location: N: Grove Street S: Grove Street
 Location: E: Woodland Road W: Woodland Road
 City, State: Newton, MA
 Client: VHB/ M. Duranleau
 Site Code: 10865.03
 Count Date: Wednesday, March 11, 2020
 Start Time: 6:00 AM
 End Time: 7:00 PM
 Class:



Buses

	Grove Street					Woodland Road					Grove Street					Woodland Road					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
Grand Total	0	15	1	0	16	1	2	19	0	22	27	12	0	0	39	2	8	0	0	10	87
Approach %	0.0	93.8	6.3	0.0		4.5	9.1	86.4	0.0		69.2	30.8	0.0	0.0		20.0	80.0	0.0	0.0		
Total %	0.0	17.2	1.1	0.0	18.4	1.1	2.3	21.8	0.0	25.3	31.0	13.8	0.0	0.0	44.8	2.3	9.2	0.0	0.0	11.5	
Exiting Leg Total	13					36					36					2					87

AM Peak Hour Analysis from 06:00 AM to 10:00 AM begins at:

7:15 AM	Grove Street					Woodland Road					Grove Street					Woodland Road					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
7:15 AM	0	0	0	0	0	0	0	1	0	1	0	2	0	0	2	0	0	0	0	0	3
7:30 AM	0	0	0	0	0	0	1	1	0	2	1	0	0	0	1	0	0	0	0	0	3
7:45 AM	0	1	0	0	1	0	0	1	0	1	1	0	0	0	1	0	1	0	0	1	4
8:00 AM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2	1	0	0	0	1	3
Total Volume	0	1	0	0	1	0	1	3	0	4	3	3	0	0	6	1	1	0	0	2	13
% Approach Total	0.0	100.0	0.0	0.0		0.0	25.0	75.0	0.0		50.0	50.0	0.0	0.0		50.0	50.0	0.0	0.0		
PHF	0.000	0.250	0.000	0.000	0.250	0.000	0.250	0.750	0.000	0.500	0.750	0.375	0.000	0.000	0.750	0.250	0.250	0.000	0.000	0.500	0.813
Entering Leg	0	1	0	0	1	0	1	3	0	4	3	3	0	0	6	1	1	0	0	2	13
Exiting Leg	3					4					5					1					13
Total	4					8					11					3					26

MidDay Peak Hour Analysis from 10:00 AM to 2:00 PM begins at:

12:15 PM	Grove Street					Woodland Road					Grove Street					Woodland Road					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
12:15 PM	0	0	0	0	0	0	0	1	0	1	0	1	0	0	1	0	0	0	0	0	2
12:30 PM	0	0	0	0	0	0	0	1	0	1	1	0	0	0	1	0	0	0	0	0	2
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 PM	0	0	0	0	0	0	1	0	0	1	2	0	0	0	2	0	0	0	0	0	3
Total Volume	0	0	0	0	0	0	1	2	0	3	3	1	0	0	4	0	0	0	0	0	7
% Approach Total	0.0	0.0	0.0	0.0		0.0	33.3	66.7	0.0		75.0	25.0	0.0	0.0		0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.500	0.000	0.750	0.375	0.250	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.583
Entering Leg	0	0	0	0	0	0	1	2	0	3	3	1	0	0	4	0	0	0	0	0	7
Exiting Leg	1					3					2					1					7
Total	1					6					6					1					14

PM Peak Hour Analysis from 2:00 PM to 07:00 PM begins at:

4:00 PM	Grove Street					Woodland Road					Grove Street					Woodland Road					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
4:00 PM	0	0	0	0	0	0	0	0	0	0	2	1	0	0	3	0	2	0	0	2	5
4:15 PM	0	0	0	0	0	0	0	1	0	1	1	0	0	0	1	0	0	0	0	0	2
4:30 PM	0	1	1	0	2	0	0	1	0	1	1	1	0	0	2	0	0	0	0	0	5
4:45 PM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
Total Volume	0	2	1	0	3	0	0	2	0	2	4	3	0	0	7	0	2	0	0	2	14
% Approach Total	0.0	66.7	33.3	0.0		0.0	0.0	100.0	0.0		57.1	42.9	0.0	0.0		0.0	100.0	0.0	0.0		
PHF	0.000	0.500	0.250	0.000	0.375	0.000	0.000	0.500	0.000	0.500	0.500	0.750	0.000	0.000	0.583	0.000	0.250	0.000	0.000	0.250	0.700
Entering Leg	0	2	1	0	3	0	0	2	0	2	4	3	0	0	7	0	2	0	0	2	14
Exiting Leg	3					2					4					0					14
Total	6					9					11					2					28

PDI File #: 207519 A
 Location: N: Grove Street S: Grove Street
 Location: E: Woodland Road W: Woodland Road
 City, State: Newton, MA
 Client: VHB/ M. Duranleau
 Site Code: 10865.03
 Count Date: Wednesday, March 11, 2020
 Start Time: 6:00 AM
 End Time: 7:00 PM
 Class:



46 Morton Street, Framingham, MA 01702
 Office: 508-875-0100 Fax: 508-875-0118
 Email: datarequests@pdilc.com

Single-Unit Trucks

	Grove Street					Woodland Road					Grove Street					Woodland Road					Total	
	from North					from East					from South					from West						
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total		
6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:15 AM	0	0	0	0	0	0	0	1	0	0	1	0	1	0	0	1	0	1	0	0	1	3
6:30 AM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	2
6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	0	1	0	1	0	0	1	0	2	0	0	2	0	1	0	0	1	5	
7:00 AM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	2
7:15 AM	0	2	0	0	2	0	0	0	0	0	1	0	0	0	1	0	2	0	0	0	2	5
7:30 AM	0	3	0	0	3	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	4
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	6	0	0	6	0	0	0	0	0	1	2	0	0	3	0	2	0	0	2	11	
8:00 AM	0	1	1	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	3
8:15 AM	0	0	0	0	0	0	0	0	0	0	1	3	0	0	4	0	0	0	0	0	0	4
8:30 AM	0	2	0	0	2	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	3
8:45 AM	0	1	1	0	2	0	1	1	0	2	0	3	0	0	3	0	1	0	0	1	8	
Total	0	4	2	0	6	0	2	1	0	3	1	7	0	0	8	0	1	0	0	1	18	
9:00 AM	0	1	0	0	1	0	1	1	0	2	0	4	0	0	4	0	0	0	0	0	0	7
9:15 AM	0	1	0	0	1	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	4
9:30 AM	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	3
9:45 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	1
Total	0	3	0	0	3	0	1	1	0	2	1	9	0	0	10	0	0	0	0	0	0	15
10:00 AM	0	0	1	0	1	0	1	0	0	1	1	2	0	0	3	0	0	0	0	0	0	5
10:15 AM	0	0	0	0	0	1	0	1	0	2	0	3	0	0	3	1	0	0	0	1	6	
10:30 AM	0	1	1	0	2	1	0	0	0	1	0	3	0	0	3	0	0	0	0	0	0	6
10:45 AM	0	0	0	0	0	0	0	0	0	0	2	2	0	0	4	0	0	0	0	0	0	4
Total	0	1	2	0	3	2	1	1	0	4	3	10	0	0	13	1	0	0	0	1	21	
11:00 AM	0	1	0	0	1	0	0	0	0	0	0	3	0	0	3	1	0	1	0	2	6	
11:15 AM	0	2	0	0	2	0	1	0	0	1	0	3	0	0	3	1	0	0	0	1	7	
11:30 AM	0	1	0	0	1	0	0	1	0	1	0	2	0	0	2	0	0	0	0	0	4	
11:45 AM	0	0	1	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2	
Total	0	4	1	0	5	0	1	1	0	2	0	9	0	0	9	2	0	1	0	3	19	
12:00 PM	0	0	1	0	1	1	1	0	0	2	0	0	0	0	0	1	0	0	0	1	4	
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	
12:30 PM	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	
Total	0	2	1	0	3	1	1	0	0	2	0	2	0	0	2	1	0	0	0	1	8	
1:00 PM	0	2	0	0	2	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	4	
1:15 PM	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	
1:45 PM	0	2	1	0	3	0	0	1	0	1	0	1	0	0	1	0	0	0	0	0	5	
Total	0	6	1	0	7	0	1	1	0	2	0	2	0	0	2	0	1	0	0	1	12	
2:00 PM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	1	0	0	0	1	3	
2:15 PM	0	1	0	0	1	0	0	0	0	0	1	0	0	0	1	1	0	0	0	1	3	
2:30 PM	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	3	
2:45 PM	0	0	0	0	0	0	0	1	0	1	0	2	0	0	2	0	0	0	0	0	3	
Total	0	4	0	0	4	0	0	1	0	1	1	4	0	0	5	2	0	0	0	2	12	
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
3:30 PM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1	
3:45 PM	0	3	0	0	3	0	0	0	0	0	0	2	0	0	2	0	1	0	0	1	6	
Total	0	3	0	0	3	0	0	1	0	1	0	3	0	0	3	0	1	0	0	1	8	
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	
4:15 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
4:30 PM	0	1	0	0	1	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	4	
4:45 PM	0	2	0	0	2	0	0	1	0	1	0	1	0	0	1	0	0	0	0	0	4	
Total	0	4	0	0	4	0	0	1	0	1	0	5	0	0	5	0	0	0	0	0	10	
5:00 PM	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	
5:15 PM	0	2	0	0	2	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	5	
5:30 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total	0	5	0	0	5	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	8	
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:15 PM	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	2	
6:30 PM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2	
6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total	0	1	1	0	2	0	0	0	0	0	0	1	0	0	1	0	1	0	0	1	4	

PDI File #: 207519 A
 Location: N: Grove Street S: Grove Street
 Location: E: Woodland Road W: Woodland Road
 City, State: Newton, MA
 Client: VHB/ M. Duranleau
 Site Code: 10865.03
 Count Date: Wednesday, March 11, 2020
 Start Time: 6:00 AM
 End Time: 7:00 PM
 Class:



Single-Unit Trucks

	Grove Street					Woodland Road					Grove Street					Woodland Road					Total	
	from North					from East					from South					from West						
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total		
Grand Total	0	44	8	0	52	3	8	8	0	19	7	59	0	0	66	6	7	1	0	14	151	
Approach %	0.0	84.6	15.4	0.0		15.8	42.1	42.1	0.0		10.6	89.4	0.0	0.0		42.9	50.0	7.1	0.0			
Total %	0.0	29.1	5.3	0.0	34.4	2.0	5.3	5.3	0.0	12.6	4.6	39.1	0.0	0.0	43.7	4.0	4.6	0.7	0.0	9.3		
Exiting Leg Total						63					22					58					8	151

AM Peak Hour Analysis from 06:00 AM to 10:00 AM begins at:

8:15 AM	Grove Street					Woodland Road					Grove Street					Woodland Road					Total	
	from North					from East					from South					from West						
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total		
8:15 AM	0	0	0	0	0	0	0	0	0	0	1	3	0	0	4	0	0	0	0	0	4	
8:30 AM	0	2	0	0	2	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	3	
8:45 AM	0	1	1	0	2	0	1	1	0	2	0	3	0	0	3	0	1	0	0	1	8	
9:00 AM	0	1	0	0	1	0	1	1	0	2	0	4	0	0	4	0	0	0	0	0	7	
Total Volume	0	4	1	0	5	0	3	2	0	5	1	10	0	0	11	0	1	0	0	1	22	
% Approach Total	0.0	80.0	20.0	0.0		0.0	60.0	40.0	0.0		9.1	90.9	0.0	0.0		0.0	100.0	0.0	0.0			
PHF	0.000	0.500	0.250	0.000	0.625	0.000	0.750	0.500	0.000	0.625	0.250	0.625	0.000	0.000	0.688	0.000	0.250	0.000	0.000	0.250	0.688	
Entering Leg	0	4	1	0	5	0	3	2	0	5	1	10	0	0	11	0	1	0	0	1	22	
Exiting Leg						10					3					6					3	22
Total						15					8					17					4	44

MidDay Peak Hour Analysis from 10:00 AM to 2:00 PM begins at:

10:30 AM	Grove Street					Woodland Road					Grove Street					Woodland Road					Total	
	from North					from East					from South					from West						
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total		
10:30 AM	0	1	1	0	2	1	0	0	0	1	0	3	0	0	3	0	0	0	0	0	6	
10:45 AM	0	0	0	0	0	0	0	0	0	0	2	2	0	0	4	0	0	0	0	0	4	
11:00 AM	0	1	0	0	1	0	0	0	0	0	0	3	0	0	3	1	0	1	0	2	6	
11:15 AM	0	2	0	0	2	0	1	0	0	1	0	3	0	0	3	1	0	0	0	1	7	
Total Volume	0	4	1	0	5	1	1	0	0	2	2	11	0	0	13	2	0	1	0	3	23	
% Approach Total	0.0	80.0	20.0	0.0		50.0	50.0	0.0	0.0		15.4	84.6	0.0	0.0		66.7	0.0	33.3	0.0			
PHF	0.000	0.500	0.250	0.000	0.625	0.250	0.250	0.000	0.000	0.500	0.250	0.917	0.000	0.000	0.813	0.500	0.000	0.250	0.000	0.375	0.821	
Entering Leg	0	4	1	0	5	1	1	0	0	2	2	11	0	0	13	2	0	1	0	3	23	
Exiting Leg						13					3					6					1	23
Total						18					5					19					4	46

PM Peak Hour Analysis from 2:00 PM to 07:00 PM begins at:

4:30 PM	Grove Street					Woodland Road					Grove Street					Woodland Road					Total	
	from North					from East					from South					from West						
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total		
4:30 PM	0	1	0	0	1	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	4	
4:45 PM	0	2	0	0	2	0	0	1	0	1	0	1	0	0	1	0	0	0	0	0	4	
5:00 PM	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	
5:15 PM	0	2	0	0	2	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	5	
Total Volume	0	7	0	0	7	0	0	1	0	1	0	7	0	0	7	0	0	0	0	0	15	
% Approach Total	0.0	100.0	0.0	0.0		0.0	0.0	100.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0			
PHF	0.000	0.875	0.000	0.000	0.875	0.000	0.000	0.250	0.000	0.250	0.000	0.583	0.000	0.000	0.583	0.000	0.000	0.000	0.000	0.000	0.750	
Entering Leg	0	7	0	0	7	0	0	1	0	1	0	7	0	0	7	0	0	0	0	0	15	
Exiting Leg						7					0					8					0	15
Total						14					1					15					0	30

PDI File #: 207519 A
 Location: N: Grove Street S: Grove Street
 Location: E: Woodland Road W: Woodland Road
 City, State: Newton, MA
 Client: VHB/ M. Duranleau
 Site Code: 10865.03
 Count Date: Wednesday, March 11, 2020
 Start Time: 6:00 AM
 End Time: 7:00 PM
 Class:



46 Morton Street, Framingham, MA 01702
 Office: 508-875-0100 Fax: 508-875-0118
 Email: datarequests@pdilc.com

Articulated Trucks

	Grove Street					Woodland Road					Grove Street					Woodland Road					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	2
7:30 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:45 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	2	0	0	2	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	4
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	2
8:15 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:30 AM	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	3
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
Total	0	2	0	0	2	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	7
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
Total	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	2
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	2
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2:30 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	2
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	3
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PDI File #: 207519 A
 Location: N: Grove Street S: Grove Street
 Location: E: Woodland Road W: Woodland Road
 City, State: Newton, MA
 Client: VHB/ M. Duranleau
 Site Code: 10865.03
 Count Date: Wednesday, March 11, 2020
 Start Time: 6:00 AM
 End Time: 7:00 PM
 Class:



46 Morton Street, Framingham, MA 01702
 Office: 508-875-0100 Fax: 508-875-0118
 Email: datarequests@pdilic.com

Articulated Trucks

	Grove Street					Woodland Road					Grove Street					Woodland Road					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
Grand Total	0	6	0	0	6	1	0	0	0	1	0	15	0	0	15	0	1	0	0	1	23
Approach %	0.0	100.0	0.0	0.0		100.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	100.0	0.0	0.0		
Total %	0.0	26.1	0.0	0.0	26.1	4.3	0.0	0.0	0.0	4.3	0.0	65.2	0.0	0.0	65.2	0.0	4.3	0.0	0.0	4.3	
Exiting Leg Total	16					1					6					0					23

AM Peak Hour Analysis from 06:00 AM to 10:00 AM begins at:

7:45 AM	Grove Street					Woodland Road					Grove Street					Woodland Road					Total	
	from North					from East					from South					from West						
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total		
7:45 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	2
8:15 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:30 AM	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	3
Total Volume	0	3	0	0	3	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	0	7
% Approach Total	0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	
PHF	0.000	0.750	0.000	0.000	0.750	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.583
Entering Leg	0	3	0	0	3	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	0	7
Exiting Leg	4					0					3					0					7	
Total	7					0					7					0					14	

MidDay Peak Hour Analysis from 10:00 AM to 2:00 PM begins at:

10:15 AM	Grove Street					Woodland Road					Grove Street					Woodland Road					Total	
	from North					from East					from South					from West						
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total		
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1
Total Volume	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	0	1	0	2
% Approach Total	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.250	0.000	0.250	0.000	0.000	0.250	0.000	0.500
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	0	1	0	2
Exiting Leg	1					1					0					1					2	
Total	1					1					1					1					4	

PM Peak Hour Analysis from 2:00 PM to 07:00 PM begins at:

2:15 PM	Grove Street					Woodland Road					Grove Street					Woodland Road					Total	
	from North					from East					from South					from West						
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total		
2:15 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2:30 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1
Total Volume	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	3
% Approach Total	0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	
PHF	0.000	0.500	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.750
Entering Leg	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	3
Exiting Leg	1					0					2					0					3	
Total	3					0					3					0					6	

PDI File #: 207519 A
 Location: N: Grove Street S: Grove Street
 Location: E: Woodland Road W: Woodland Road
 City, State: Newton, MA
 Client: VHB/ M. Duranleau
 Site Code: 10865.03
 Count Date: Wednesday, March 11, 2020
 Start Time: 6:00 AM
 End Time: 7:00 PM
 Class:



46 Morton Street, Framingham, MA 01702
 Office: 508-875-0100 Fax: 508-875-0118
 Email: datarequests@pdilc.com

Bicycles (on Roadway and Crosswalks)

	Grove Street							Woodland Road							Grove Street							Woodland Road							Total
	from North							from East							from South							from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	
6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1
8:00 AM	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:15 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	0	0	0	1	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	1
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	2
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	2	0	0	0	2	2	3
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1
Total	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1	2
12:00 PM	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	2	0	0	0	0	2	3
Total	0	0	0	0	0	1	1	0	0	1	0	0	1	0	0	0	0	0	0	0	0	2	0	0	0	0	2	2	4
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	2	0	0	0	0	0	0	0	0	2
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	2
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0	0	1	1	0	0	0	0	0	1	3
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:45 PM	0	0	0	0	2	1	3	0	0	0	0	0	0	0	0	0	0	0	1	1	2	0	0	0	0	0	0	0	5
Total	0	0	0	0	2	1	3	0	0	0	1	1	2	1	0	0	0	1	1	3	0	1	0	0	0	0	1	9	9
6:00 PM	0	1	0	0	1	1	3	0	0	0	0	0	0	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	4
6:15 PM	0	0	0	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0	0	1	1	0</							

PDI File #: 207519 A
 Location: N: Grove Street S: Grove Street
 Location: E: Woodland Road W: Woodland Road
 City, State: Newton, MA
 Client: VHB/ M. Duranleau
 Site Code: 10865.03
 Count Date: Wednesday, March 11, 2020
 Start Time: 6:00 AM
 End Time: 7:00 PM
 Class:



Bicycles (on Roadway and Crosswalks)

	Grove Street							Woodland Road							Grove Street							Woodland Road							Total
	from North							from East							from South							from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	
Grand Total	0	3	0	0	4	4	11	0	0	3	0	1	1	5	4	2	0	0	1	1	8	0	6	0	0	1	1	8	32
Approach %	0.0	27.3	0.0	0.0	36.4	36.4		0.0	0.0	60.0	0.0	20.0	20.0		50.0	25.0	0.0	0.0	12.5	12.5		0.0	75.0	0.0	0.0	12.5	12.5		
Total %	0.0	9.4	0.0	0.0	12.5	12.5	34.4	0.0	0.0	9.4	0.0	3.1	3.1	15.6	12.5	6.3	0.0	0.0	3.1	3.1	25.0	0.0	18.8	0.0	0.0	3.1	3.1	25.0	
Exiting Leg Total	10							12							8							2							32

AM Peak Hour Analysis from 06:00 AM to 10:00 AM begins at:

	Grove Street							Woodland Road							Grove Street							Woodland Road							Total
	from North							from East							from South							from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:15 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total Volume	0	1	0	0	0	0	1	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
% Approach Total	0.0	100.0	0.0	0.0	0.0	0.0		0.0	0.0	100.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	100.0		
PHF	0.000	0.250	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.250	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.250	0.750	
Entering Leg	0	1	0	0	0	0	1	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	3
Exiting Leg	0							0							2							1							3
Total	1							1							2							2							6

MidDay Peak Hour Analysis from 10:00 AM to 2:00 PM begins at:

	Grove Street							Woodland Road							Grove Street							Woodland Road							Total
	from North							from East							from South							from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	
12:00 PM	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	2	0	0	0	0	2	3
Total Volume	0	0	0	0	0	1	1	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	2	0	0	0	0	2	4
% Approach Total	0.0	0.0	0.0	0.0	0.0	100.0		0.0	0.0	100.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.250	0.250	0.000	0.000	0.250	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.250	0.333	
Entering Leg	0	0	0	0	0	1	1	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	2	0	0	0	0	2	4
Exiting Leg	1							2							1							0							4
Total	2							3							1							2							8

PM Peak Hour Analysis from 2:00 PM to 07:00 PM begins at:

	Grove Street							Woodland Road							Grove Street							Woodland Road							Total
	from North							from East							from South							from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:45 PM	0	0	0	0	2	1	3	0	0	0	0	0	0	0	0	0	0	0	1	1	2	0	0	0	0	0	0	0	5
6:00 PM	0	1	0	0	1	1	3	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	4
6:15 PM	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	2
Total Volume	0	1	0	0	3	3	7	0	0	0	0	0	1	1	1	1	0	0	1	1	4	0	0	0	0	0	0	0	12
% Approach Total	0.0	14.3	0.0	0.0	42.9	42.9		0.0	0.0	0.0	0.0	0.0	100.0		25.0	25.0	0.0	0.0	25.0	25.0		0.0	0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.250	0.000	0.000	0.375	0.750	0.583	0.000	0.000	0.000	0.000	0.000	0.250	0.250	0.250	0.250	0.000	0.000	0.250	0.250	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.600
Entering Leg	0	1	0	0	3	3	7	0	0	0	0	0	1	1	1	1	0	0	1	1	4	0	0	0	0	0	0	0	12
Exiting Leg	7							2							3							0							12
Total	14							3							7							0							24

PDI File #: 207519 A
 Location: N: Grove Street S: Grove Street
 Location: E: Woodland Road W: Woodland Road
 City, State: Newton, MA
 Client: VHB/ M. Duranleau
 Site Code: 10865.03
 Count Date: Wednesday, March 11, 2020
 Start Time: 6:00 AM
 End Time: 7:00 PM
 Class:



46 Morton Street, Framingham, MA 01702
 Office: 508-875-0100 Fax: 508-875-0118
 Email: datarequests@pdilic.com

Pedestrians

	Grove Street								Woodland Road								Grove Street								Woodland Road								Total
	from North								from East								from South								from West								
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total		Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total		Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total		Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total		
6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2			
6:30 AM	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2	3			
6:45 AM	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	4	5		
Total	0	0	0	0	2	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	1	2	3	8	9			
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	1	1	3			
7:30 AM	0	0	0	0	2	1	3	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	5		
7:45 AM	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2	3	4			
Total	0	0	0	0	2	2	4	0	0	0	0	1	0	1	0	0	0	0	0	2	0	2	0	2	0	0	1	2	3	10	11		
8:00 AM	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	0	0	1	1	4	5		
8:15 AM	0	0	0	0	2	11	13	0	0	0	0	0	1	1	0	0	0	0	0	4	2	6	0	0	0	0	1	13	14	34	35		
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	4	4	0	0	0	0	2	1	3	7	8		
8:45 AM	0	0	0	0	0	2	2	0	0	0	0	0	1	1	0	0	0	0	0	0	0	1	1	0	0	0	2	0	2	6	7		
Total	0	0	0	0	3	14	17	0	0	0	0	0	2	2	0	0	0	0	0	5	7	12	0	0	0	0	5	15	20	51	52		
9:00 AM	0	0	0	0	3	1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2	5	6			
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	4	0	0	0	0	0	0	0	4	5		
9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	1	2		
Total	0	0	0	0	3	1	4	0	0	0	0	0	0	0	0	0	0	0	0	4	1	5	0	0	0	0	1	1	10	11	12		
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	1	2		
10:15 AM	0	0	0	0	0	0	1	0	0	0	0	1	1	2	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	4	5		
10:30 AM	0	0	0	0	0	0	1	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	4	5		
10:45 AM	0	0	0	0	0	1	1	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	6	7		
Total	0	0	0	0	0	3	3	0	0	0	0	4	2	6	0	0	0	0	0	0	2	2	0	0	0	0	1	3	4	15	16		
11:00 AM	0	0	0	0	2	0	2	0	0	0	0	1	0	1	0	0	0	0	0	1	1	2	0	0	0	0	0	1	1	6	7		
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2		
11:30 AM	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2	0	0	0	0	1	0	1	4	5		
11:45 AM	0	0	0	0	3	0	3	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2	0	0	0	0	1	1	2	7	8		
Total	0	0	0	0	6	0	6	0	0	0	0	2	0	2	0	0	0	0	0	3	3	6	0	0	0	0	2	2	4	18	19		
12:00 PM	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1	1	2	4	5			
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	0	0	0	0	1	1	2	5	6		
12:30 PM	0	0	0	0	0	1	1	0	0	0	0	1	0	1	0	0	0	0	0	1	5	6	0	0	0	0	0	2	2	10	11		
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	5	0	5	0	0	0	0	3	1	4	10	11		
Total	0	0	0	0	0	2	2	0	0	0	0	2	0	2	0	0	0	0	0	9	6	15	0	0	0	0	5	5	10	29	30		
1:00 PM	0	0	0	0	2	0	2	0	0	0	0	1	0	1	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	5	6		
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	1	2	3	0	0	0	0	0	1	0	1	0	0	0	0	0	1	1	5	6		
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	3	3	4			
1:45 PM	0	0	0	0	1	1	2	0	0	0	0	1	0	1	0	0	0	0	0	0	1	1	0	0	0	0	0	1	0	1	5	6	
Total	0	0	0	0	3	1	4	0	0	0	0	3	2	5	0	0	0	0	0	1	3	4	0	0	0	0	2	3	5	18	19		
2:00 PM	0	0	0	0	1	1	2	0	0	0	0	0	3	3	0	0	0	0	0	0	1	1	0	0	0	0	0	3	3	9	10		
2:15 PM	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	2	0	2	4	5		
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	1	2	3	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	4	5		
2:45 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	0	0	0	0	2	2	4	8	9		
Total	0	0	0	0	2	2	4	0	0	0	0	1	5	6	0	0	0	0	0	4	1	5	0	0	0	0	4	6	10	25	26		
3:00 PM	0	0	0	0	0	1	1	0	0	0	0	1	9	10	0	0	0	0	0	1	13	14	0	0	0	0	0	0	0	25	26		
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	1	3	4	0	0	0	0	0	0	5	5	0	0	0	0	0	1	1	10	11		
3:30 PM	0	0	0	0	1	0	1	0	0	0	0	5	1	6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	8	9		
3:45 PM	0	0	0	0	1	0	1	0	0	0	0	6	1	7	0	0	0	0	0	1	0	1	0	0	0	0	1	0	1	10	11		
Total	0	0	0	0	2	1	3	0	0	0	0	13	14	27	0	0	0	0	0	2	18	20	0	0	0	0	2	1	3	53	54		
4:00 PM	0	0	0	0	1	0	1	0	0	0	0	5	0	5	0	0	0	0	0	0	0	0	0	0	0	0	1	1	7	8			
4:15 PM	0	0	0	0	2	0	2	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2	6	7		
4:30 PM	0	0	0	0	0	1	1	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	5	4	9	11	12		
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2	3	4		
Total	0	0	0	0	3	1	4	0	0	0	0	8	1	9	0	0	0	0	0	0	0	0	0	0	0	0	7	6	13	26	27		
5:00 PM	0	0	0	0	1	0	1	0	0	0	0	1	1	1	0	0	0	0	0	0	3	3	0	0	0	0	1	1	2	7	8		
5:15 PM	0	0	0	0	1	3	4	0	0	0	0	0	3	3	0	0	0	0	0	0	5	5	0	0	0	0	4	4	16	17			
5:30 PM	0	0	0	0	1	1	2	0	0	0	0	2	1	3	0	0	0	0	0	4	7	11	0	0	0	0	0	1	1	17	18		
5:45 PM	0	0																															

PDI File #: 207519 A
 Location: N: Grove Street S: Grove Street
 Location: E: Woodland Road W: Woodland Road
 City, State: Newton, MA
 Client: VHB/ M. Duranleau
 Site Code: 10865.03
 Count Date: Wednesday, March 11, 2020
 Start Time: 6:00 AM
 End Time: 7:00 PM
 Class:



46 Morton Street, Framingham, MA 01702
 Office: 508-875-0100 Fax: 508-875-0118
 Email: datarequests@pdilic.com

Pedestrians

	Grove Street							Woodland Road							Grove Street							Woodland Road							Total
	from North							from East							from South							from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	
Grand Total	0	0	0	0	36	39	75	0	0	0	0	39	38	77	0	0	0	0	37	62	99	0	0	0	0	36	56	92	343
Approach %	0	0	0	0	48	52		0	0	0	0	51	49		0	0	0	0	37	63		0	0	0	0	39	61		
Total %	0	0	0	0	10	11	22	0	0	0	0	11	11	22	0	0	0	0	11	18	29	0	0	0	0	10	16	27	
Exiting Leg Total	75							77							99							92							343

AM Peak Hour Analysis from 06:00 AM to 10:00 AM begins at:

	Grove Street							Woodland Road							Grove Street							Woodland Road							Total
	from North							from East							from South							from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	
8:15 AM	0	0	0	0	2	11	13	0	0	0	0	0	1	1	0	0	0	0	4	2	6	0	0	0	0	1	13	14	34
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	4	0	0	0	0	2	1	3	7
8:45 AM	0	0	0	0	0	2	2	0	0	0	0	0	1	1	0	0	0	0	0	1	1	0	0	0	0	2	0	2	6
9:00 AM	0	0	0	0	3	1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	5
Total Volume	0	0	0	0	5	14	19	0	0	0	0	0	2	2	0	0	0	0	4	7	11	0	0	0	0	5	15	20	52
% Approach Total	0.0	0.0	0.0	0.0	26.3	73.7		0.0	0.0	0.0	0.0	0.0	100.0		0.0	0.0	0.0	0.0	36.4	63.6		0.0	0.0	0.0	0.0	25.0	75.0		
PHF	0.000	0.000	0.000	0.000	0.417	0.318	0.365	0.000	0.000	0.000	0.000	0.500	0.500	0.000	0.000	0.000	0.000	0.250	0.438	0.458	0.000	0.000	0.000	0.000	0.625	0.288	0.357	0.382	
Entering Leg	0	0	0	0	5	14	19	0	0	0	0	0	2	2	0	0	0	0	4	7	11	0	0	0	0	5	15	20	52
Exiting Leg	19							2							11							20							52
Total	38							4							22							40							104

MidDay Peak Hour Analysis from 10:00 AM to 2:00 PM begins at:

	Grove Street							Woodland Road							Grove Street							Woodland Road							Total
	from North							from East							from South							from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	0	0	0	0	1	1	2	5
12:30 PM	0	0	0	0	0	1	1	0	0	0	0	1	0	1	0	0	0	0	1	5	6	0	0	0	0	0	2	2	10
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	5	0	5	0	0	0	0	3	1	4	10
1:00 PM	0	0	0	0	2	0	2	0	0	0	0	1	0	1	0	0	0	0	0	2	2	0	0	0	0	0	0	0	5
Total Volume	0	0	0	0	2	1	3	0	0	0	0	3	0	3	0	0	0	0	9	7	16	0	0	0	0	4	4	8	30
% Approach Total	0.0	0.0	0.0	0.0	66.7	33.3		0.0	0.0	0.0	0.0	100.0	0.0		0.0	0.0	0.0	0.0	56.3	43.8		0.0	0.0	0.0	0.0	50.0	50.0		
PHF	0.000	0.000	0.000	0.000	0.250	0.250	0.375	0.000	0.000	0.000	0.000	0.750	0.750	0.000	0.000	0.000	0.000	0.450	0.350	0.667	0.000	0.000	0.000	0.000	0.333	0.500	0.500	0.750	
Entering Leg	0	0	0	0	2	1	3	0	0	0	0	3	0	3	0	0	0	0	9	7	16	0	0	0	0	4	4	8	30
Exiting Leg	3							3							16							8							30
Total	6							6							32							16							60

PM Peak Hour Analysis from 2:00 PM to 07:00 PM begins at:

	Grove Street							Woodland Road							Grove Street							Woodland Road							Total
	from North							from East							from South							from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	
5:15 PM	0	0	0	0	1	3	4	0	0	0	0	0	3	3	0	0	0	0	0	5	5	0	0	0	0	0	4	4	16
5:30 PM	0	0	0	0	1	1	2	0	0	0	0	2	1	3	0	0	0	0	4	7	11	0	0	0	0	0	1	1	17
5:45 PM	0	0	0	0	0	5	5	0	0	0	0	0	2	2	0	0	0	0	2	2	4	0	0	0	0	0	1	1	12
6:00 PM	0	0	0	0	4	0	4	0	0	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	3	1	4	11
Total Volume	0	0	0	0	6	9	15	0	0	0	0	2	9	11	0	0	0	0	6	14	20	0	0	0	0	3	7	10	56
% Approach Total	0.0	0.0	0.0	0.0	40.0	60.0		0.0	0.0	0.0	0.0	18.2	81.8	0.0	0.0	0.0	0.0	30.0	70.0		0.0	0.0	0.0	0.0	30.0	70.0			
PHF	0.000	0.000	0.000	0.000	0.375	0.450	0.750	0.000	0.000	0.000	0.000	0.250	0.750	0.917	0.000	0.000	0.000	0.000	0.375	0.500	0.455	0.000	0.000	0.000	0.000	0.250	0.438	0.625	0.824
Entering Leg	0	0	0	0	6	9	15	0	0	0	0	2	9	11	0	0	0	0	6	14	20	0	0	0	0	3	7	10	56
Exiting Leg	15							11							20							10							56
Total	30							22							40							20							112

**Grove Street at Woodland Road
Existing Traffic Volume Comparison**

Note: Counts conducted on Wednesday, March 11, 2020 at the beginning of the Coronavirus-related shutdowns. Local schools and Lasell College were in session this day, but general traffic was beginning to go decrease (full school shut-downs and bar/restaurant closures did not begin until the following week). Volumes compared to June 2018 counts to provide a comparison of "normal" traffic conditions.

Wednesday March 11, 2020, is right when travel habits began to change, and travel patterns may have shifted over the course of the day as people responded to the outbreak in real-time. As shown, AM volumes are down ~7% and PM volumes are down ~16% compared to 2018 counts. Therefore, the adjustment factor will be scaled as the day progresses to account for the real-time adjustment in travel patterns on the day of the traffic counts.

2020 Existing Conditions (March)																	
Time	Eastbound (Woodland Road)				Westbound (Woodland Road)				Northbound (Grove Street)				Southbound (Grove Street)				All Appr. Total
	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
6:00 AM	0	38	12	50	11	14	1	26	5	209	23	237	10	92	1	103	416
7:00 AM	3	91	22	116	48	34	8	90	12	367	62	441	19	217	0	236	883
8:00 AM	4	103	55	162	90	70	20	180	6	336	55	397	18	270	4	292	1031
9:00 AM	3	44	26	73	58	41	21	120	9	216	37	262	21	161	1	183	638
10:00 AM	2	40	25	67	20	23	30	73	8	177	38	223	20	101	2	123	486
11:00 AM	3	42	15	60	17	22	14	53	5	175	28	208	25	110	7	142	463
12:00 PM	2	44	16	62	40	43	36	119	7	184	34	225	26	147	6	179	585
1:00 PM	6	42	15	63	36	46	29	111	8	140	30	178	30	157	2	189	541
2:00 PM	4	40	24	68	35	47	28	110	12	171	33	216	22	174	3	199	593
3:00 PM	6	66	32	104	52	46	33	131	14	216	36	266	23	227	3	253	754
4:00 PM	3	59	12	74	41	64	42	147	11	244	35	290	14	198	3	215	726
5:00 PM	5	82	12	99	40	62	12	114	14	331	79	424	21	232	4	257	894
6:00 PM	6	49	9	64	31	37	18	86	9	240	38	287	23	143	1	167	604

Source - Counts conducted by VHB for 13 consecutive hours on Wednesday, March 11, 2020

2018 Existing Conditions (June)																	
Time	Eastbound (Woodland Road)				Westbound (Woodland Road)				Northbound (Grove Street)				Southbound (Grove Street)				All Appr. Total
	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
7:00 AM	4	89	34	127	41	37	12	90	12	393	93	498	21	203	2	226	941
8:00 AM	4	91	87	182	87	65	20	172	10	365	86	461	29	272	1	302	1117
4:00 PM	3	62	25	90	30	64	28	122	19	314	35	368	15	269	1	285	865
5:00 PM	7	158	14	179	28	49	25	102	21	371	102	494	12	277	4	293	1068

Source - Counts conducted by VHB on Wednesday, June 13, 2018 (included in December 2019 TIAS)

**Grove Street at Woodland Road
Existing Traffic Volume Comparison**

Volume Difference 2020 to 2018																	
Time	Eastbound (Woodland Road)				Westbound (Woodland Road)				Northbound (Grove Street)				Southbound (Grove Street)				All Appr. Total
	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
7:00 AM	-1	2	-12	-11	7	-3	-4	0	0	-26	-31	-57	-2	14	-2	10	-58
8:00 AM	0	12	-32	-20	3	5	0	8	-4	-29	-31	-64	-11	-2	3	-10	-86
4:00 PM	0	-3	-13	-16	11	0	14	25	-8	-70	0	-78	-1	-71	2	-70	-139
5:00 PM	-2	-76	-2	-80	12	13	-13	12	-7	-40	-23	-70	9	-45	0	-36	-174

Percent Difference 2020 to 2018																		
Time	Eastbound (Woodland Road)				Westbound (Woodland Road)				Northbound (Grove Street)				Southbound (Grove Street)				All Appr. Total	Peak Avg
	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total		
7:00 AM	-25.0%	2.2%	-35.3%	-8.7%	17.1%	-8.1%	-33.3%	0.0%	0.0%	-6.6%	-33.3%	-11.4%	-9.5%	6.9%	-100.0%	4.4%	-6.2%	-6.9%
8:00 AM	0.0%	13.2%	-36.8%	-11.0%	3.4%	7.7%	0.0%	4.7%	-40.0%	-7.9%	-36.0%	-13.9%	-37.9%	-0.7%	300.0%	-3.3%	-7.7%	
4:00 PM	0.0%	-4.8%	-52.0%	-17.8%	36.7%	0.0%	50.0%	20.5%	-42.1%	-22.3%	0.0%	-21.2%	-6.7%	-26.4%	200.0%	-24.6%	-16.1%	-16.2%
5:00 PM	-28.6%	-48.1%	-14.3%	-44.7%	42.9%	26.5%	-52.0%	11.8%	-33.3%	-10.8%	-22.5%	-14.2%	75.0%	-16.2%	0.0%	-12.3%	-16.3%	

2020 Existing Conditions (March) - Adjusted																		
Time	Eastbound (Woodland Road)				Westbound (Woodland Road)				Northbound (Grove Street)				Southbound (Grove Street)				All Appr. Total	Adjust-ments
	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total		
6:00 AM	0	40	13	53	12	15	1	28	5	221	24	250	11	97	1	109	440	5.8%
7:00 AM	3	97	24	124	51	36	9	96	13	392	66	471	20	232	0	252	943	6.9%
8:00 AM	4	110	59	173	96	75	21	192	6	359	59	424	19	289	4	312	1101	6.9%
9:00 AM	3	48	28	79	63	44	23	130	10	233	40	283	23	174	1	198	690	8.1%
10:00 AM	2	44	27	73	22	25	33	80	9	193	42	244	22	110	2	134	531	9.2%
11:00 AM	3	46	17	66	19	24	15	58	6	193	31	230	28	121	8	157	511	10.4%
12:00 PM	2	49	18	69	45	48	40	133	8	205	38	251	29	164	7	200	653	11.6%
1:00 PM	7	47	17	71	41	52	33	126	9	158	34	201	34	177	2	213	611	12.7%
2:00 PM	5	46	27	78	40	54	32	126	14	195	38	247	25	198	3	226	677	13.9%
3:00 PM	7	76	37	120	60	53	38	151	16	248	41	305	26	261	3	290	866	15.0%
4:00 PM	3	69	14	86	48	74	49	171	13	283	41	337	16	230	3	249	843	16.2%
5:00 PM	6	95	14	115	46	72	14	132	16	385	92	493	24	270	5	299	1039	16.2%
6:00 PM	7	57	11	75	36	43	21	100	11	282	45	338	27	168	1	196	709	17.3%

Note - Adjustment factors scaled as the day progresses to account for the real-time adjustment in travel patterns on the day of the traffic counts

2009 MUTCD

TRAFFIC SIGNAL WARRANT ANALYSIS (VOLUME BASED)

Intersection: **Grove Street at Woodland Street**

Major Street Direction: Northbound-Southbound ▼

Year: **2020** Condition: **Existing Conditions**

Operating speed on major roadway: **25** mph
 Number of approaches: **4**

Required approach volumes

Warrant 1	EIGHT-HOUR VEHICULAR VOLUME	Minimum*	Adjusted Minimum**
Warrant 1A	MINIMUM VEHICULAR VOLUME (8 hours of day)		
	Major Street : 1 Lane(s) on each approach	500	500
	Minor Street : 1 Lane(s) on each approach	150	150
Warrant 1B	INTERRUPTION OF CONTINUOUS TRAFFIC (8 hours of day)		
	Major Street : 1 Lane(s) on each approach	750	750
	Minor Street : 1 Lane(s) on each approach	75	75
80 PERCENT SATISFACTION OF WARRANT 1A AND WARRANT 1B		Warrant 1A	Warrant 1B
	Major Street : 1 Lane(s) on each approach	400	600
	Minor Street : 1 Lane(s) on each approach	120	60

Warrant 2	FOUR HOUR VEHICULAR VOLUME
	Major Street : 1 Lane(s) on each approach
	Minor Street : 1 Lane(s) on each approach

If "verify" indicated, see Figure 4C-1 or 4C-2.
25 = accuracy of regression equations

Warrant 3	PEAK HOUR VOLUME
	Major Street : 1 Lane(s) on each approach
	Minor Street : 1 Lane(s) on each approach

If "verify" indicated, see Figure 4C-3 or 4C-4.
25 = accuracy of regression equations

Hour	Entering Vol. Minor Road+	Entering Vol. on Major Road		Tot. Ent. Vol. On Major Rd	Meets the following volume-based warrants?				
		Northbound	Southbound		1A	1B	80%(1A&1B)	2	3
6:00 - 7:00 AM	28	250	109	359	No	No	No	No	No
7:00 - 8:00 AM	96	471	252	723	No	No	No	No	No
8:00 - 9:00 AM	192	424	312	736	Yes	No	Yes	Yes	No
9:00 - 10:00 AM	130	283	198	481	No	No	No	No	No
10:00 - 11:00 AM	80	244	134	378	No	No	No	No	No
11:00 - 12:00 AM	58	230	157	387	No	No	No	No	No
12:00 - 1:00 PM	133	251	200	451	No	No	No	No	No
1:00 - 2:00 PM	126	201	213	414	No	No	No	No	No
2:00 - 3:00 PM	126	247	226	473	No	No	No	No	No
3:00 - 4:00 PM	151	305	290	595	Yes	No	No	No	No
4:00 - 5:00 PM	171	337	249	586	Yes	No	No	No	No
5:00 - 6:00 PM	132	493	299	792	No	Yes	Yes	No	No
6:00 - 7:00 PM	100	338	196	534	No	No	No	No	No
					No	No	No	No	No
					Warrants Met?	1	2	3	3
						No	No	No	No

Note: Volumes based on 2020 Existing Conditions (adjusted based on 2018 distributions to reflect average conditions)
Note: Minor Road volumes for Woodland Road westbound approach (includes all left, through, and right-turning traffic)
Note: Grove Street approach volumes includes all left, through, and right-turning vehicles to be conservative

*From the criteria described for the warrant in the MUTCD.

**If the operating speed is higher than 40mph then the volumes can be adjusted to 70%. (If no adjusted minimum, the minimum from the previous column is shown)

+If more than one approach, report the approach that has the higher volume.

NON VEHICULAR-VOLUME-BASED WARRANTS

Warrant 4, Minimum Pedestrian Volume:

Hour	# of Ped Crossings	Meets?
6:00 - 7:00 AM	8	No
7:00 - 8:00 AM	10	No
8:00 - 9:00 AM	51	No
9:00 - 10:00 AM	10	No
10:00 - 11:00 AM	15	No
11:00 - 12:00 AM	18	No
12:00 - 1:00 PM	29	No
1:00 - 2:00 PM	18	No
2:00 - 3:00 PM	25	No
3:00 - 4:00 PM	53	No
4:00 - 5:00 PM	26	No
5:00 - 6:00 PM	52	No
6:00 - 7:00 PM	28	No
Warrant Met?		No

*107 pedestrians per hour for four hours is the minimum threshold

Warrant 5, School Crossing*: No

See MUTCD for details.

*School crossing warrant does not apply as current all-way stop control provides sufficient gaps in traffic

Warrant 6, Coordinated Signal System: No

See MUTCD for details.

Warrant 7, Crash Experience: No

of accidents "correctable by signalization" occurring in the last 12 months: (threshold is 5 crashes correctable by signalization)

2015	3
2016	1
2017	1
Avg.	2

Warrant 8, Roadway Network: No

See MUTCD for details.

Warrant 9, Grade Crossing: No

See MUTCD for details.

Source: *Manual on Uniform Traffic Control Devices (MUTCD); 2009 Edition [2009]*

2009 MUTCD

TRAFFIC SIGNAL WARRANT ANALYSIS (VOLUME BASED)

Intersection: **Grove Street at Woodland Street**

Major Street Direction: Northbound-Southbound ▼

Year: **2029** Condition: **No Build Conditions**

Operating speed on major roadway: **25** mph
 Number of approaches: **4**

Required approach volumes

Warrant 1	EIGHT-HOUR VEHICULAR VOLUME	Minimum*	Adjusted Minimum**
		Warrant 1A	MINIMUM VEHICULAR VOLUME (8 hours of day)
	Major Street :	500	500
	Minor Street :	150	150
Warrant 1B	INTERRUPTION OF CONTINUOUS TRAFFIC (8 hours of day)		
	Major Street :	750	750
	Minor Street :	75	75
80 PERCENT SATISFACTION OF WARRANT 1A AND WARRANT 1B		Warrant 1A	Warrant 1B
	Major Street :	400	600
	Minor Street :	120	60

Warrant 2	FOUR HOUR VEHICULAR VOLUME	
	Major Street :	1 Lane(s) on each approach
	Minor Street :	1 Lane(s) on each approach
		If "verify" indicated, see Figure 4C-1 or 4C-2. 25 = accuracy of regression equations

Warrant 3	PEAK HOUR VOLUME	
	Major Street :	1 Lane(s) on each approach
	Minor Street :	1 Lane(s) on each approach
		If "verify" indicated, see Figure 4C-3 or 4C-4. 25 = accuracy of regression equations

Hour	Entering Vol. Minor Road+	Entering Vol. on Major Road		Tot. Ent. Vol. On Major Rd	Meets the following volume-based warrants?				
		Northbound	Southbound		1A	1B	80%(1A&1B)	2	3
6:00 - 7:00 AM	29	262	114	376	No	No	No	No	No
7:00 - 8:00 AM	100	493	264	757	No	Yes	No	No	No
8:00 - 9:00 AM	201	444	327	771	Yes	Yes	Yes	Yes	No
9:00 - 10:00 AM	136	297	208	505	No	No	No	No	No
10:00 - 11:00 AM	84	257	142	399	No	No	No	No	No
11:00 - 12:00 AM	61	243	167	410	No	No	No	No	No
12:00 - 1:00 PM	139	265	212	477	No	No	No	No	No
1:00 - 2:00 PM	132	213	225	438	No	No	No	No	No
2:00 - 3:00 PM	132	261	239	500	No	No	No	No	No
3:00 - 4:00 PM	158	321	306	627	Yes	No	Yes	No	No
4:00 - 5:00 PM	179	355	263	618	Yes	No	Yes	No	No
5:00 - 6:00 PM	138	518	316	834	No	Yes	Yes	No	No
6:00 - 7:00 PM	105	356	207	563	No	No	No	No	No
					No	No	No	No	No
					Warrants Met?	1	2	3	
						No	No	No	No

Note: Volumes based on 2020 Existing Conditions (adjusted based on 2018 distributions to reflect average conditions)
 Note: Minor Road volumes for Woodland Road westbound approach (includes all left, through, and right-turning traffic)
 Note: Grove Street approach volumes includes all left, through, and right-turning vehicles to be conservative

*From the criteria described for the warrant in the MUTCD.

**If the operating speed is higher than 40mph then the volumes can be adjusted to 70%. (If no adjusted minimum, the minimum from the previous column is shown)

+If more than one approach, report the approach that has the higher volume.

NON VEHICULAR-VOLUME-BASED WARRANTS

Warrant 4, Minimum Pedestrian Volume:

Hour	Ex. # of Ped Xings ¹	Meets?
6:00 - 7:00 AM	8	No
7:00 - 8:00 AM	10	No
8:00 - 9:00 AM	51	No
9:00 - 10:00 AM	10	No
10:00 - 11:00 AM	15	No
11:00 - 12:00 AM	18	No
12:00 - 1:00 PM	29	No
1:00 - 2:00 PM	18	No
2:00 - 3:00 PM	25	No
3:00 - 4:00 PM	53	No
4:00 - 5:00 PM	26	No
5:00 - 6:00 PM	52	No
6:00 - 7:00 PM	28	No
Warrant Met?		No

¹ - 2020 volumes shown. Future ped crossings not expected to increase enough to meet warrant

*107 pedestrians per hour for four hours is the minimum threshold

Source: Manual on Uniform Traffic Control Devices (MUTCD); 2009 Edition [2009]

Warrant 5, School Crossing*: **No**

See MUTCD for details.

*School crossing warrant does not apply as current all-way stop control provides sufficient gaps in traffic

Warrant 6, Coordinated Signal System: **No**

See MUTCD for details.

Warrant 7, Crash Experience: **No**

of accidents "correctable by signalization" occurring in the last 12 months: (threshold is 5 crashes correctable by signalization)

Total crashes (from MassDOT crash portal):
 2015 **3**
 2016 **1**
 2017 **1**
 Avg. **2**

Warrant 8, Roadway Network: **No**

See MUTCD for details.

Warrant 9, Grade Crossing: **No**

See MUTCD for details.

2009 MUTCD

TRAFFIC SIGNAL WARRANT ANALYSIS (VOLUME BASED)

Intersection: **Grove Street at Woodland Street**

Major Street Direction: Northbound-Southbound ▼

Year: **2029** Condition: **Build Conditions**

Operating speed on major roadway: **25** mph
 Number of approaches: **4**

Required approach volumes

Warrant 1	EIGHT-HOUR VEHICULAR VOLUME	Adjusted	
		Minimum*	Minimum**
Warrant 1A	MINIMUM VEHICULAR VOLUME (8 hours of day)		
	Major Street :	500	500
	Minor Street :	150	150
Warrant 1B	INTERRUPTION OF CONTINUOUS TRAFFIC (8 hours of day)		
	Major Street :	750	750
	Minor Street :	75	75
80 PERCENT SATISFACTION OF WARRANT 1A AND WARRANT 1B		Warrant 1A	Warrant 1B
	Major Street :	400	600
	Minor Street :	120	60

Warrant 2	FOUR HOUR VEHICULAR VOLUME	
	Major Street :	1 Lane(s) on each approach
	Minor Street :	1 Lane(s) on each approach
		If "verify" indicated, see Figure 4C-1 or 4C-2. 25 = accuracy of regression equations

Warrant 3	PEAK HOUR VOLUME	
	Major Street :	1 Lane(s) on each approach
	Minor Street :	1 Lane(s) on each approach
		If "verify" indicated, see Figure 4C-3 or 4C-4. 25 = accuracy of regression equations

Hour	Entering Vol. Minor Road+	Entering Vol. on Major Road		Tot. Ent. Vol. On Major Rd	Meets the following volume-based warrants?				
		Northbound	Southbound		1A	1B	80%(1A&1B)	2	3
6:00 - 7:00 AM	33	276	129	405	No	No	No	No	No
7:00 - 8:00 AM	110	528	300	828	No	Yes	No	No	No
8:00 - 9:00 AM	217	479	387	866	Yes	Yes	Yes	Yes	No
9:00 - 10:00 AM	144	324	236	560	No	No	No	No	No
10:00 - 11:00 AM	92	286	173	459	No	No	No	No	No
11:00 - 12:00 AM	73	285	211	496	No	No	No	No	No
12:00 - 1:00 PM	153	314	264	578	Yes	No	No	No	No
1:00 - 2:00 PM	144	256	271	527	No	No	No	No	No
2:00 - 3:00 PM	144	304	284	588	No	No	No	No	No
3:00 - 4:00 PM	170	364	351	715	Yes	No	Yes	No	No
4:00 - 5:00 PM	195	411	322	733	Yes	No	Yes	Yes	No
5:00 - 6:00 PM	148	581	351	932	No	Yes	Yes	Yes	No
6:00 - 7:00 PM	116	394	247	641	No	No	No	No	No
					No	No	No	No	No
					Warrants Met?	1	No	2	3
								No	No

Note: Volumes based on 2020 Existing Conditions (adjusted based on 2018 distributions to reflect average conditions)
 Note: Minor Road volumes for Woodland Road westbound approach (includes all left, through, and right-turning traffic)
 Note: Grove Street approach volumes includes all left, through, and right-turning vehicles to be conservative

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NON VEHICULAR-VOLUME-BASED WARRANTS

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8:00 - 9:00 AM	51	No
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10:00 - 11:00 AM	15	No
11:00 - 12:00 AM	18	No
12:00 - 1:00 PM	29	No
1:00 - 2:00 PM	18	No
2:00 - 3:00 PM	25	No
3:00 - 4:00 PM	53	No
4:00 - 5:00 PM	26	No
5:00 - 6:00 PM	52	No
6:00 - 7:00 PM	28	No
Warrant Met?		No

¹ - 2020 volumes shown. Future ped crossings not expected to increase enough to meet warrant
 *107 pedestrians per hour for four hours is the minimum threshold

Warrant 5, School Crossing*: **No**

See MUTCD for details.
 *School crossing warrant does not apply as current all-way stop control provides sufficient gaps in traffic

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2015	3
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Warrant 9, Grade Crossing: **No**

See MUTCD for details.

Source: Manual on Uniform Traffic Control Devices (MUTCD); 2009 Edition [2009]