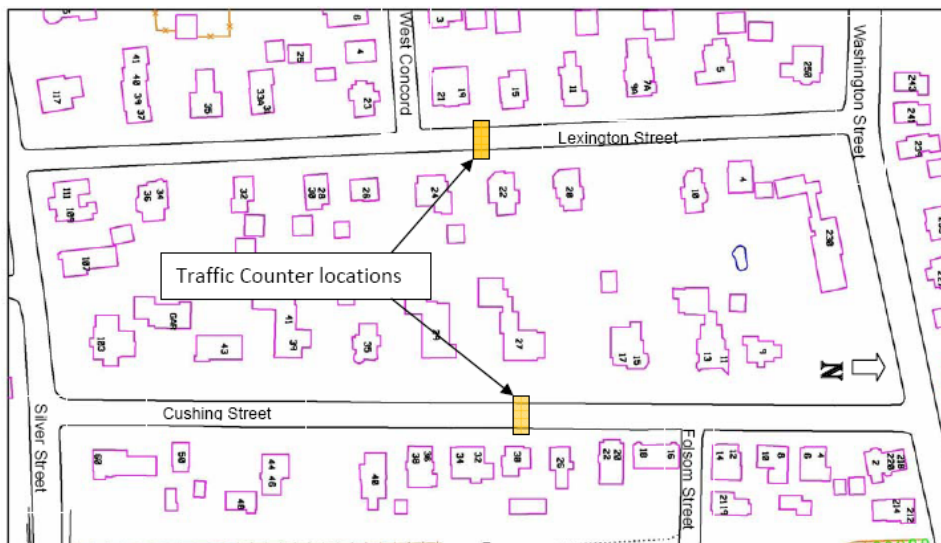


TO: Chief Anthony F. Colarusso, Jr.
FROM: Sgt. Marn E. Speidel
RE: Overview of Traffic Measures on Lexington and Cushing Streets
DATE: September 22, 2010

Lexington and Cushing Streets are parallel residential streets marking adjacent blocks connecting Silver Street (NH Rte 9) and Washington Street. Each is less than 1,200' in length and is oriented in a north-south direction. Traffic on these streets is estimated to be at least 95% "through" traffic, which has no origin or destination on either street or the intersecting side streets (West Concord or Folsom). Lexington now has an average width of 30'. Cushing has an average width of 35'6".

Traffic counts on each street were conducted by the Police Department Traffic Bureau on three separate occasions (2005, 2009 and 2010) using Jamar Technologies' Trax I data recorders and associated TraxPro software. Raw data from each count is on file with the DPD Traffic Bureau. Each count was conducted for a minimum of a full week and was recorded in approximately the locations shown below¹:



¹ On Lexington Street, the 2005 count was just south of West Concord. 2009 and 2010 counts were located as shown above.

2005 DATA

Lexington Street

Lexington Street traffic was recorded from November 1, 2005 through November 8, 2005 over seven full 24-hour periods. Summary data is as follows:

Combined ADT ¹ :	1,904	85 th percentile speed ² :	33 mph
Northbound ADT:	1,053 (55%)	Average speed:	27 mph
Southbound ADT:	851 (45%)		

MPH	# of Vehicles	% of Total
0 – 25	4,708	35.3 %
26 – 30	5,481	41.1 %
31 – 35	2,588	19.4 %
36 – 40	469	3.5 %
41+	85	0.6 %

Cushing Street

Cushing Street traffic was recorded simultaneously (November 1 – 8, 2005). Summary data is as follows:

Combined ADT:	1,846	85 th percentile speed:	33 mph
Northbound ADT:	926 (50%)	Average speed:	27 mph
Southbound ADT:	920 (50%)		

MPH	# of Vehicles	% of Total
0 – 25	4,707	36.4 %
26 – 30	5,133	39.7 %
31 – 35	2,484	19.2 %
36 – 40	482	3.7 %
41+	120	0.9 %

2009 DATA

Work on the Community Trail project required the closure of a segment of Silver between Belknap and Cushing for several weeks between May and June 2009. Counts were not conducted until after this project was completed and traffic patterns had returned to normal.

In June 2009, in accordance with a recommendation of the Transportation Advisory Commission and pursuant to NH RSA 265:63³, the posted speed limit on both Lexington

¹ Average Daily Traffic: total of all traffic divided by the number of separate 24-hour periods.

² 85th percentile means that 85 percent of all vehicles were traveling at or below the specified value. This is a federally accepted engineering standard typically used to assess the “comfort level” of most motorists who use a roadway.

³ New Hampshire Revised Statutes Annotated, 265:63: Alteration of Limits

and Cushing Streets was reduced from 30 mph to 25 mph. Both streets are already restricted to commercial vehicle traffic.



Lexington Street

Lexington Street was the focus of targeted traffic enforcement patrols in June 2009 during AM and PM peak periods. 10.5 man-hours were spent, resulting in 2 summonses and 14 warnings.

Following the speed limit reduction, Lexington Street traffic was recorded from July 6 - 13, 2009 over seven full 24-hour periods. Summary data is as follows:

Combined ADT:	1,182	85 th percentile speed:	32 mph
Northbound ADT:	698 (59%)	Average speed:	26 mph
Southbound ADT:	484 (41%)		

MPH	# of Vehicles	% of Total
0 – 25	3,099	37.4 %
26 – 30	3,549	42.8 %
31 – 35	1,381	16.7 %
36 – 40	228	2.7 %
41+	21	0.2 %

Cushing Street

Cushing Street was the site of various road work projects including installation of a natural gas line. It was completely resurfaced in May 2008. In June 2009, Cushing was also the focus of targeted traffic enforcement patrols during AM and PM commuting times. 13 man-hours were spent, resulting in 2 summonses and 24 warnings.

Cushing Street traffic was recorded from July 6 – 13, 2009. Summary data is as follows:

Combined ADT:	2,435	85 th percentile speed:	33 mph
Northbound ADT:	1,243 (51%)	Average speed:	27 mph
Southbound ADT:	1,192 (49%)		

MPH	# of Vehicles	% of Total
0 – 25	5,793	34.0 %
26 – 30	7,027	41.2 %
31 – 35	3,388	19.9 %
36 – 40	579	3.4 %
41+	259	1.5 %

2010 DATA

Lexington Street

On June 24, 2010, a speed table was installed on Lexington Street (between house numbers 11 and 20) as part of a project to reset curbs and improve sidewalks on both sides. The overall width of the street was also reduced from an average of 32' to 30'. This device extends for the entire width of the street, with design dimensions that include a 10' table, 6' ramps, and a maximum lift of 3".



Following the speed table installation, Lexington Street traffic was recorded from July 9 – 16, 2010 over seven full 24-hour periods. Summary data is as follows:

Combined ADT:	1,014	85 th percentile speed:	26 mph
Northbound ADT:	588 (58%)	Average speed:	19 mph
Southbound ADT:	426 (42%)		

MPH	# of Vehicles	% of Total
0 – 25	6,026	84.8 %
26 – 30	841	11.8 %
31 – 35	188	2.6 %
36 – 40	33	0.5 %
41+	13	0.2 %

Cushing Street

Cushing Street was the focus of intensified police traffic enforcement patrols through the summer of 2010, with a combination of regular duty directed patrols and overtime patrols funded by a federal grant from the New Hampshire Highway Safety. In the month of July 2010, prior to and during the period when the counter equipment was in place, 9 man-hours were spent resulting in 12 stops (2 speed summonses, 8 speed warnings, and 2 other violations).

Cushing Street traffic was recorded from July 16 – 23, 2010. Summary data is as follows:

Combined ADT:	2,586	85 th percentile speed:	32 mph
Northbound ADT:	1,391 (54%)	Average speed:	26 mph
Southbound ADT:	1,195 (46%)		

MPH	# of Vehicles	% of Total
0 – 25	6,986	38.6 %
26 – 30	7,483	41.3 %
31 – 35	3,028	16.7 %
36 – 40	427	2.3 %
41+	179	1.0 %

CONCLUSIONS

- 1) A disparity in volume between Lexington and Cushing Streets has appeared over the last five years. This was evident prior to the installation of the Lexington Street speed table and has increased since. Note that Cushing Street was resurfaced in 2008 and is at least 5' wider on average.
 - a. ADT for both streets combined has remained fairly constant: 3,750 in 2005, 3,617 in 2009, and 3,600 in 2010.
 - b. In 2005, traffic volume was split fairly evenly between both streets (ADT = 1,904 on Lexington (50.7%); 1,846 on Cushing (49.3%)).
 - c. By 2009, Cushing Street had assumed a 67% share of the traffic. Lexington Street ADT dropped 38% (1,904 to 1,182), while Cushing Street ADT increased 32% (1,846 to 2,435).
 - d. In 2010, Cushing Street carries 72% of the traffic between the two streets.
- 2) The speed limit reduction (30 mph to 25 mph) had minimal effect in reducing traffic speeds.
 - a. Between 2005 and 2009, Lexington Street saw a 1 mph reduction in average (27 vs. 26) and 85th percentile (33 vs. 32) speed. This could be due to the deteriorating condition of the road surface over that time period, the targeted 2009 enforcement, slight margins in rounding of data, or any combination of the above.

- b. Cushing Street saw no change in average (27) and 85th percentile (33) speed over the same time period.
- 3) Targeted enforcement patrols had minimal effect in reducing traffic speeds.
 - a. Cushing Street saw a 1 mph reduction in average and 85th percentile speeds recorded between 2009 and 2010. 4.9% of all traffic exceeded 35 mph in 2009, 3.3% exceeded 35 mph in 2010.
- 4) The speed table on Lexington Street had an immediate and significant effect in reducing traffic speeds.
 - a. 85th percentile speed dropped from 32 mph (2009) to 26 mph (2010).
 - b. Average speed dropped from 26 mph to 19 mph.

RECOMMENDATIONS

- 1) Cushing Street should be strongly considered for installation of traffic calming measures such as a speed table.
 - a. This may help to better equalize the volume disparity between Cushing and Lexington.
 - b. Potential effect on other parallel streets connecting Silver to Washington (Belknap and Atkinson) should also be considered. Due to design differences and comparatively lower volumes, similar measures on these streets may or may not be necessary. Arch Street also runs parallel but is less likely to receive shifted traffic due to the signals at Silver Street.
- 2) Until traffic calming measures are installed, the police department should still perform periodic patrols on Cushing Street to the extent of available resources.
 - a. 179 vehicles exceeding the speed limit by more than 15 mph over a one week period (2010 data) may be viewed by some as a glaring problem, yet this represents only 1% of all traffic. If spread over a period of seven days, and isolated to the “normal” traffic flow hours between 7:00 AM and 10:00 PM, this translates to only 1.7 vehicles per 60-minute period. This is substantially less than has been recorded on other streets throughout the City of Dover. The police department must justify the overall effectiveness of an officer’s time in evaluating its priorities. A higher priority is generally assigned to major arteries and collector streets.
 - b. A close review of the 2010 raw data for Cushing Street shows that very rarely were there more than 2 vehicles recorded in any hourly period exceeding 40 mph. However, there were more vehicles recorded between 46 and 50 mph (99) than were recorded between 41 and 45 mph (74). This is unusual. Traffic count data more commonly shows a smooth, progressive “bell” type curve over the speed range. It is possible that some of this data is represented by “spikes”. Speed and volume are measured by an air pulse from a vehicle passing over two tubes spaced at 8’ apart. A “spike” is a false speed reading created when two vehicles in opposite directions strike the near tube at nearly the same time. The same anomaly was observed in the 2009 Cushing Street data.