

Appendix A: Traffic Volumes

The project area currently has one unsignalized intersection for which traffic counts are available as well as 6 signalized intersections. From the west, they are:

	has little or no cross traffic	existing counts: date & period	new counts: date & period
Wood / Harvard		August 2012, 7 AM to 6 PM	October 2018, 4 PM to 6 PM
610 Cummins	x	-	-
Itasca / Ridlon		-	August 2018, 4 PM to 6 PM
Woodhaven		-	July 2018, 4 PM to 6 PM
Rockdale	x	-	-
Fairway St (unsignalized)		June 2017, 7 AM to 6 PM	-
Blue Hill Ave (Mattapan Square)		May 2014, 4 PM to 6 PM	-

Existing counts for three intersections (two signalized, one unsignalized) with significant cross traffic were available from past studies, provided by the Boston Transportation Department from their files. Analysis of existing counts showed that the p.m. peak has the greatest hourly volumes, and so *this feasibility study focuses on the p.m. peak*. New counts, therefore, were done for the p.m. peak only, at the three intersections indicated above. Two of the signalized intersections have little or no cross traffic, and so there is no need for traffic counts there. At Mattapan Square, where Cummins Highway is not the major arterial, this project proposes no change to the signal timing. Therefore, the only volumes that matter for this project are the volumes entering and leaving Cummins Highway.

Intersection Turning Volumes

The traffic model uses a set of current and consistent traffic volumes matching Fall, 2018 conditions, calibrated to the new counts done in October, 2018 at Wood / Harvard. Volumes at Wood / Harvard were found to be 5% greater than those recorded in August, 2012; therefore, existing p.m. peak volumes at Fairway and at Mattapan Square were multiplied by 1.05. The new counts done in July and August (at Itasca/Ridlon and at Woodhaven) were also multiplied by 1.05, a factor that brought their link counts into balance with the October, 2018 volumes.

To analyze and simulate the corridor as a whole, a uniform peak hour of 4:30 PM to 5:30 PM was applied; that is the peak hour of the critical intersection, Wood / Harvard. That is, volumes for all intersections were as counted between 4:30 and 5:30, with the inflation adjustments described earlier. The following figures show the traffic volumes for each of the signalized intersections in the stretch of study after the adjustments described earlier.

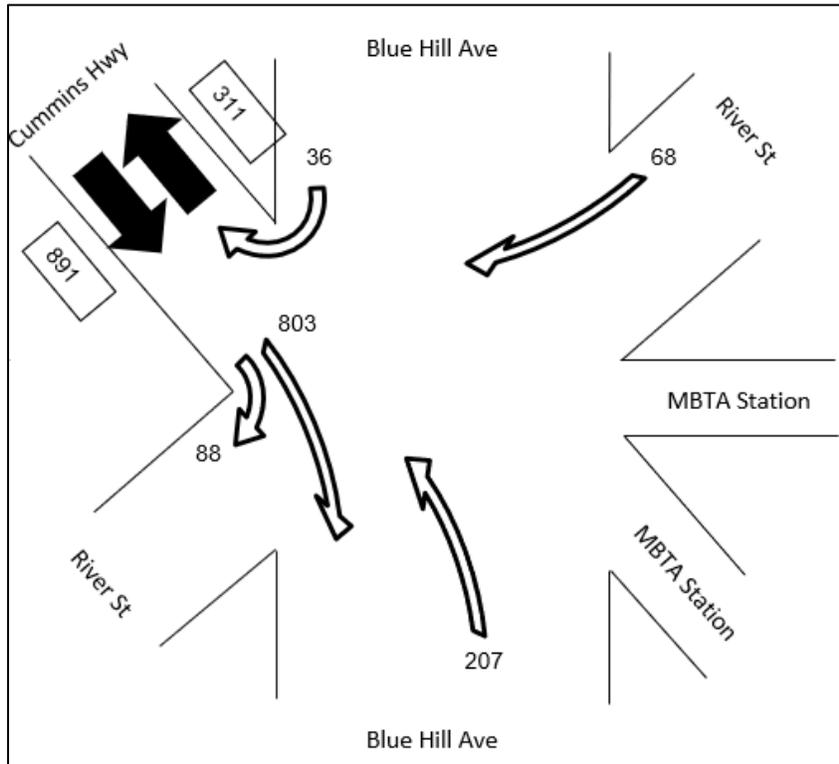


Figure 1 – Mattapan Sq P.M. peak traffic counts (volumes entering / departing Cummins Hwy only)

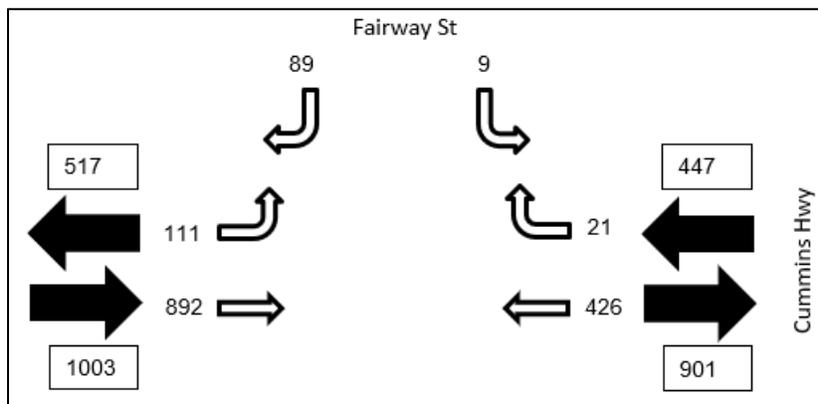


Figure 2 – Cummins Hwy at Fairway St P.M. peak traffic counts

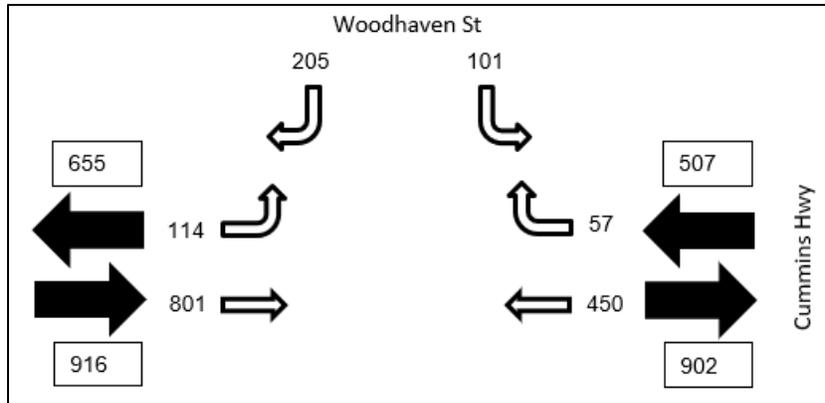


Figure 3 – Cummins Hwy at Woodhaven St P.M. peak traffic counts

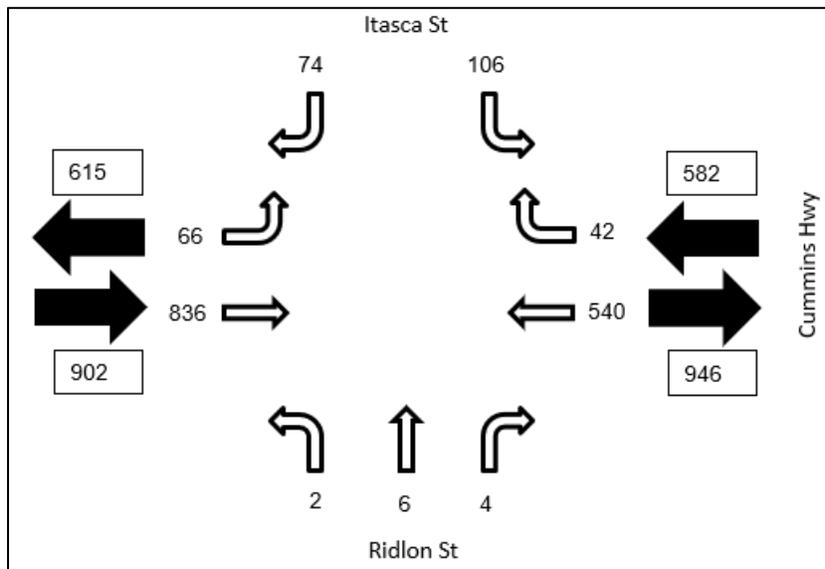


Figure 4 – Cummins Hwy at Itasca St/Ridlon St P.M. peak traffic counts

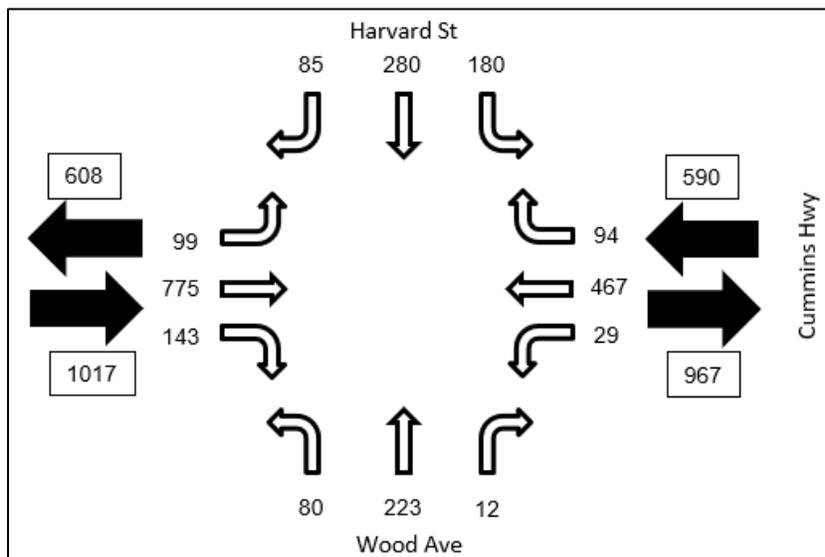


Figure 5 – Cummins Hwy at Wood Ave/Harvard St P.M. peak traffic counts

Balancing Volumes Along the Corridor; Turning Volumes at Minor Intersections

From turning counts at each intersection, the entering and exiting volumes were calculated for segments between every two intersections for which counts are available. Comparing the entering and exiting volume in each segment, a net difference was calculated. The following table shows the summary of calculations.

Segment	Direction	Entering	Exiting	Net Difference
Between Wood / Harvard and Itasca / Ridlon	EB	967	902	-65
	WB	615	590	-25
Between Itasca / Ridlon and Woodhaven	EB	946	916	-30
	WB	655	582	-73
Between Woodhaven and Fairway	EB	902	1003	101
	WB	516	507	-9
Between Fairway and Blue Hill Ave (Mattapan Square)	EB	901	891	-10
	WB	311	447	136

Net differences can random factors (counting errors and random differences between days that were counted) and / or the systematic of traffic entering or leaving Cummins Highway from side streets. If random factors are ignored, negative values in “Net Difference” column indicate that more vehicles turned off onto the side streets than turned on from side streets onto Cummins Highway, while the positive values suggest the opposite. Moderately small negative differences, as found for almost every segment, are reasonable for a road passing through a residential area that has more homes than jobs and is therefore expected to be a net sink in the p.m. peak. In the simulation, therefore, these negative differences are accounted for by assigning them to the side streets; as a result, in the simulation, entering and exiting volumes for every segment were consistent and matched the counts. The only positive difference is the westbound segment from Mattapan Square to Fairway; the net difference there is considerable and there is no side street that can explain it. In this case, additional volume was assigned to the SBR movement from Blue Hill Ave entering Cummins Hwy; that way the exiting volume at Fairway matched the counted link volume there.