

TO: Cambridge-Somerville Truck Committee and Others interested in the
Heavy truck Problem
FROM: Richard A. Easler, DATE: 9/17/73
Cambridge Planning Department
SUBJECT: Preliminary Results of the August 20, 1973 Cambridge-Somerville
Truck O-D Survey

On Monday night, August 20th, a 12 hour truck survey was conducted jointly by the City of Cambridge, the City of Somerville, and the State Department of Public Works, with major assistance from HALT (Humans Against Loud Trucks) and the M.I.T. Planning Office. The all-night survey of in-bound heavy trucking was made at three locations in Cambridge and one in Somerville on the initiative of the State Department of Public Works, in response to requests by the cities of Cambridge and Somerville for comprehensive State action on the trucking problem.

Overall purpose of the survey was to provide facts on night-time trucking in Cambridge and Somerville. Each truck driver was asked twelve questions, including the origin and destination of his trip, cargo carried, and whether the trip was to include a pick-up or delivery in Cambridge or Somerville. The survey findings are to be used in judging the feasibility of a night-time ban of heavy "through" trucking carrying non-dangerous cargo through the River-Western-Prospect-Washington corridor.

Background

The impact of heavy trucks operating on local residential streets in Cambridge and Somerville has been well publicized by various public agencies and citizen organizations. The problem has increased steadily over the years since the opening of the Massachusetts Turnpike inside Route 128. These major State facilities have been responsible for a substantial increase in through truck traffic on local streets in Cambridge and Somerville with the River-Western-Prospect-Washington corridor receiving the major brunt of this increase.

This corridor in Cambridge can be generally characterized as a mixture of housing (both single and multi-family structures) and small commercial establishments. The 1970 census indicates that 6500 people live within the census blocks adjacent to the corridor of which 2000 live along the block fronts facing the

three streets heavily used by trucks. Data obtained from the Sanborn Atlas and the Cambridge Directory and a visual survey show that these 2000 people live in 750 dwelling units along the street fronts.

The three streets in the corridor were not designed for compatibility between trucks and people. Due to the narrowness of the streets and the close proximity of residential units to the streets, truck traffic severely impacts residents in terms of noise, air quality and safety. In fact, homes throughout most of the corridor are only 10 to 15 feet from the edge of the street.

Table I summarizes heavy truck volumes in the corridor and indicates the general characteristics of trucks using these facilities. All three streets carry substantial traffic volumes ranging from a one-way volume of 5700 cars per day on southbound Prospect Street to 11,200 on Western Avenue. The important traffic characteristics however, is the very high percentage of trucks using these predominantly residential streets; 21 per cent for Prospect Street and 19 per cent for River Street and Western Avenue. Heavy trucks, those with three or more axles, comprise 38 percent of the truck volume in the corridor. This represents almost 1000 daily heavy trucks (two-way) on Prospect Street and over 750 (one-way) heavy trucks on River Street and Western Avenue.

The primary objection to truck traffic in the corridor is the resulting noise which severely disrupts normal living habits. BTPR's draft report on the truck problem in the corridor states that a busy surface street with five to ten per cent heavy trucks will generate noise that will be very annoying to people in abutting housing. The Prospect-River-Western Corridor has seven and one half per cent heavy trucks on a daily average and almost eight per cent at night. A parallel noise intensity survey, conducted by DOT's Transportation Systems Center, on Prospect Street indicates that the noise level on the street is "clearly unacceptable". A report on the findings of this survey will be released shortly.

Since the impact of noise on residential neighborhoods is most intense at night, any reduction in heavy truck volumes during these hours would be most beneficial. Table I shows that from 7 PM to 7AM 200 heavy trucks travel River Street and Western Avenue and 300 heavy truck (two-way) travel Prospect Street. For this reason, the Cities of Cambridge and Somerville each filed in October of 1972, applications to the State Department of Public Works requesting that night-time and weekend non-dangerous through heavy trucking (2½ tons or more) be banned from the River-Western-Prospect-Washington corridor. These applications were later combined to form a single request.

A decision on this request has been delayed for a number of reasons including the lack of data relating to the origins and destinations of heavy trucking in the corridor and the relative importance of local versus through trucking. Therefore, a joint task force composed of neighborhood groups, the State DPW, the transportation staffs of Cambridge and Somerville, MIT, and representatives of the trucking industry developed a program for conducting a limited night-time truck origin-destination survey in the eastern parts of Cambridge and Somerville. The preliminary results of this effort are presented in this memo.

Time and Location

The survey was conducted for the 12 hour period from 7PM to 7AM on the night of Monday the 20th of August 1973. Interview stations were established at the following four locations; three in Cambridge and one in Somerville.

Station 1: River Street at Memorial Drive - Cambridge

Station 2: Massachusetts Avenue at Memorial Drive - Cambridge

Station 3: Main Street at Memorial Drive - Cambridge

Station 4: Washington Street at McGrath Highway - Somerville

Interviewers consisted of volunteers from Cambridge and Somerville City staffs, M.I.T., HALT, and concerned citizens of the two cities. At least three people were assigned to each station throughout the night. One person counted all trucks passing the station in the inbound direction, i.e. headed for Central Square, while the others interviewed as many trucks as possible.

Volume and Sample Size

Table 2 summarizes the night-time truck volumes counted at each station by size of truck and indicates the sample size interviewed. Overall, 555 trucks were counted at the four stations of which 407 or 73.4 per cent were interviewed. This is a very high sample size which means that the data can be used with a high degree of confidence. In fact, 82.5 percent of the heavy trucks (3 axels or more) were interviewed. These are the most important trucks as far as this survey is concerned.

The volumes for Station I (River Street) were then compared with a traffic count conducted in early 1972 (see Table 1). This comparison indicates that only 208 total trucks were counted in the survey versus 273 trucks for the 1972 count. The same relationship holds true for heavy trucks, 147 compared with 207. Thus, there were roughly 25% less trucks traveling River Street on the

night of the survey. The reason for the difference in truck volume is not known at this time but the sample size is large enough to draw meaningful conclusions. The survey data that follows can be expanded to relate to either total volume number.

Through versus Local Trucking

The prime impetus for this survey was the need to establish the relationship between through and local trucking in the River-Western-Prospect-Washington Street corridor. A summary of the findings is presented in Tables 3, 4, and 5. For computation purposes, the data collected for Station 4 (Washington Street) was separated into two categories; trucks destined for the Prospect Street Corridor and trucks destined for the Somerville Avenue Corridor. This splitting of the data was required because the survey revealed that a large number of trucks were using Washington Street to reach Route 2 via Somerville Avenue, Massachusetts Avenue and the Alewife Brook Parkway.

The data presented in Table 3 indicates that 66 percent or two-thirds of all trucks passing the four stations did not have business in either Cambridge or Somerville. This number increases to 70 percent when only the heavy (3 axles or more) trucks are considered. Individual summaries by station and truck size are also presented. For heavy trucks the percentages range from a low of 41 percent on Massachusetts Avenue to a high of 81 percent on Washington Street for those trucks heading for the Prospect Street corridor.

Because dangerous cargo trucks are not allowed to use the Massachusetts Turnpike beyond the Allston exit, a further breakdown for heavy through trucks by dangerous vs. non-dangerous cargo is presented in Table 4. This data indicates that 61 percent of the heavy through trucks passing the four stations contain non-dangerous cargoes. This means that of the 339 heavy trucks interviewed 144 or 42 percent are through trucks carrying non-dangerous cargoes.

Since a major objective of the survey was to collect data useable in the evaluation of the Cambridge and Somerville night-time heavy truck ban request for the River-Western-Prospect-Washington Street Corridor, the data for that corridor was combined and presented in table 5. This summary reveals that 72 per cent of the heavy trucking in the corridor does not have business in either Cambridge or Somerville. Of these 153 trucks, 113 or 74% contained non-dangerous cargoes. This means that 113 or 214 heavy trucks in the corridor or 53 per cent are divertable to the Massachusetts Turnpike because they are non-dangerous through trucks.

Origins and Destinations of Heavy Through Trucks

A summary of the origins and/or destinations of all through heavy trucks interviewed during the survey is presented in tables 6 through 10. The orientation of origins and destinations was as expected except for one notable exception; the predominance of Boston oriented trucking that passed through Cambridge and Somerville. This amounted to 20 per cent of the heavy trucks on River Street, 57 percent on Massachusetts Avenue, 37 percent on Main Street and 27 per cent on Washington Street. Except for those carrying dangerous cargoes most of these trucks along with the other through trucks should be able to be rerouted over the Massachusetts Turnpike or other limited access facilities.

Table 11 is presented only to give an indication of routings through Cambridge and Somerville of night time through heavy trucking. In addition to the large volume of trucks using Somerville Avenue and Massachusetts Avenue to reach Route 2, two other routings seem worth noting. One is the lack of heavy through dangerous cargo trucking on Prospect Street itself. These trucks are taking two separate routes to reach the major highways to the west and northwest. Dangerous cargo trucks heading for the Massachusetts turnpike and the west use the Tobin Bridge, Storrow Drive, Main Street, Massachusetts Avenue and Western Avenue, while trucks headed for Route 2 use Broadway, Washington Street, Somerville Avenue, Massachusetts Avenue and the Alewife Brook Parkway. There is very little crossing of the two movements via Prospect Street.

The other other routing worth noting is that trucks from Boston use Main Street, Vasser or Albany Streets and the B.U. Bridge to by-pass local streets in Boston for Boston oriented business.

Routings of Cambridge Oriented Heavy Trucks

Table 12 contains figures on the routing of heavy trucks with destinations in Cambridge. This data is included only for information purposes for those interested in local Cambridge trucking characteristics.

Table 1
Summary of Heavy Truck (3 axles or more) Volumes in the Prospect-River-Western
Corridor

	<u>ADT</u>	<u>Total Daily Trucks</u>	<u>Percent Total Trucks of ADT</u>	<u>Total Daily Heavy Trucks</u>	<u>Percent Heavy Trucks of ADT</u>	<u>Percent Heavy Trucks of Total Trucks</u>	<u>Total Vehicles 7PM-7AM</u>
River Street (North bound)	9795	1889	19.2	764	7.8	40.4	2397
Prospect Street (North bound)	6296	1342	21.3	499	7.9	37.2	1809
Prospect Street (South bound)	5726	1212	21.1	447	7.8	36.9	1567
Western Avenue (South bound)	11201	2097	18.7	767	6.8	36.6	3099

Table 1 (Cont'd)

	<u>Total Trucks 7PM-7AM</u>	<u>Percent Total Trucks 7PM-7AM</u>	<u>Total Heavy Trucks 7PM-7AM</u>	<u>Frequency of Heavy Trucks 7PM-7AM</u>
River Street (North bound)	273	11.4	207	17/hr.
Prospect Street (North bound)	212	11.7	141	12/hr.
Prospect Street (South bound)	258	16.5	152	13/hr.
Western Avenue (South bound)	399	12.9	203	17/hr.

Sources: Cambridge Department of Traffic and Parking Surveys of January and March, 1972

Table 2
Trucks Volumes and Sample Size

	Total Trucks			Heavy Trucks (3 axles or more)			Tractor Trailer Cabs		
	Counted	Inter.	Sample %	Counted	Inter.	Sample %	Counted	Inter.	Sample %
Station 1 River Street	208	168	80.8	147	136	92.5	8	8	100.0
Station 2 Massachusetts Avenue	44	23	52.3	22	17	77.3	0	0	-
Station 3 Main Street	105	65	61.9	68	51	75.0	1	1	100.0
Station 4 Washington Street	198	151	76.3	174	135	77.6	5	5	100.0
Total	555	407	73.4	411	339	82.5	14	14	100.0

Table 2 (Cont'd)

Two-Axle Trucks

	Counted	Inter.	Sample %
Station 1 River Street	53	24	45.3
Station 2 Massachusetts Avenue	22	6	27.2
Station 3 Main Street	36	13	36.2
Station 4 Washington Street	19	11	57.9
Total	130	54	41.5

Table 3

Summary of Through vs. Local Trucking

	<u>Station 1-River St.</u>		<u>Station 2-Mass. Ave</u>		<u>Station 3-Main St.</u>		<u>Station 4- Washington St</u> (Prospect St. Destination)	
	<u>Number</u>	<u>Percent</u>	<u>Number</u>	<u>Percent</u>	<u>Number</u>	<u>Percent</u>	<u>Number</u>	<u>Percent</u>
Heavy Trucks (3 axles or more)								
Cambridge Bus.	27	19.8	10	58.8	15	29.4	6	7.7
Somerville Bus.	19	14.0	0	-	1	2.0	9	11.5
Through Trucks	90	62.2	7	41.2	35	68.6	63	80.8
Total	136	100.0	17	100.0	51	100.0	78	100.0
Tractor-trailer Cabs								
Cambridge Bus	1	12.5	0	-	0	-	0	-
Somerville Bus	1	12.5	0	-	0	-	1	33.3
Through Trucks	6	75.0	0	-	1	100.0	2	66.7
Total	8	100.0	0	-	1	100.0	3	100.0
Two-axles Trucks								
Cambridge Bus	12	50.0	5	83.3	9	69.2	1	14.3
Somerville Bus	3	12.5	0	-	1	7.7	1	14.3
Through Trucks	9	37.5	1	16.7	3	23.1	5	71.4
Total	24	100.0	6	100.0	13	100.0	7	100.0
Total Trucks								
Cambridge Bus	40	23.8	15	65.2	24	37.0	7	7.9
Somerville Bus	23	13.7	0	-	2	3.0	11	12.5
Through Trucks	105	62.5	8	34.8	39	60.0	70	79.6
Total	168	100.0	23	100.0	65	100.0	88	100.0

Table 3 (Cont'd)

	Station 4 <u>Washington St.</u> (Somerville Ave Dest.)		<u>Total All Stations</u>	
	Number	Percent	Number	Percent
Heavy Trucks (3 axles or more)				
Cambridge Bus	3	5.3	61	18.0
Somerville Bus	12	21.0	41	12.1
Through Trucks	42	73.7	237	69.9
Total	57	100.0	339	100.0
Tractor-Trailer Cabs				
Cambridge Bus	0	-	1	7.2
Somerville Bus	1	50.0	3	21.4
Through Trucks	1	50.0	10	71.4
Total	2	100.0	14	100.0
Two-Axle Trucks				
Cambridge Bus	0	-	27	50.0
Somerville Bus	0	-	5	9.3
Through Trucks	4	100.0	22	40.7
Total	4	100.0	54	100.0
Total Trucks				
Cambridge Bus	3	4.8	89	21.9
Somerville Bus	13	20.6	49	12.0
Through Trucks	47	74.6	269	66.1
Total	63	100.0	407	100.0

Table 4

Summary of Dangerous vs. Non-Dangerous Cargoes for Through Heavy Trucking (3 axles or more)

	Station 1 River St.		Station 2 Mass. Ave		Station 3 Main St.		Station 4 -Washington St. (Prospect Destination)	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Dangerous Cargo	34	37.8	0	-	31	88.6	6	9.5
Non-Dangerous Cargo	56	62.2	7	100.0	4	11.4	57	90.5
Total	90	100.0	7	100.0	35	100.0	63	100.0
Percent of Heavy Trucks Divertable (Non-Dangerous through trucks)	56/136	41.2	7/17	35.3	4/51	7.8	57/78	73.1
	Station 4-Washington St. (Somerville Ave. Destin.)		Total All Stations					
	Number		Percent		Number		Percent	
Dangerous Cargo	22		52.4		93		39.2	
Non-Dangerous Cargo	20		47.6		144		60.8	
Total	42		100.0		237		100.0	
Percent of Heavy Trucks Divertable (Non-dangerous through trucks)	20/57		35.1		144/339		42.5	

Table 5
Summary of Trucking Characteristics in the Prospect Street Corridor

	Station 1 River St.		Station 4 Washington St.		Total for the Corridor	
	Number	Percent	Number	Percent	Number	Percent
Heavy Trucks (3 axles or more)						
Cambridge Bus	27	19.8	6	7.7	33	15.4
Somerville Bus	19	14.0	9	11.5	28	13.1
Through Trucks	90	62.2	63	80.8	153	71.5
Total	136	100.0	78	100.0	214	100.0
Tractor-Trailer Cabs						
Cambridge Bus	1	12.5	0	-	1	9.1
Somerville Bus	1	12.5	1	33.3	2	18.2
Through Trucks	6	75.0	2	66.7	8	72.7
Total	8	100.0	3	100.0	11	100.0
Two-Axle Trucks						
Cambridge Bus	12	50.0	1	14.3	13	41.9
Somerville Bus	3	12.5	1	14.3	4	12.9
Through Trucks	9	37.5	5	71.4	14	45.2
Total	24	100.0	7	100.0	31	100.0
Total Trucks						
Cambridge Bus	40	23.8	7	7.9	47	18.3
Somerville Bus	23	13.7	11	12.5	34	13.3
Through Trucks	105	62.5	70	79.6	175	68.4
Total	168	100.0	88	100.0	256	100.0
Dangerous vs. Non-dangerous Through Heavy Trucking						
Dangerous Cargo	34	37.8	6	9.5	40	26.2
Non-dangerous Cargo	56	62.2	57	90.5	113	73.8
Total	90	100.0	63	100.0	153	100.0
Percent of Heavy Trucks Driven by (Non-Dangerous through trucks)	56/136	41.2	57/78	73.1	113/214	52.7

Table 6
Destinations of Heavy Through Trucks
Station 1 - River Street

<u>Destination</u>	<u>Number</u>	<u>Percent</u>
Non-Dangerous Cargoes		
Medford	14	25.0
Boston	9	16.1
Chelsea	8	14.3
Maine, N.H., and Canada	7	12.5
Everett	6	10.7
Malden	6	10.7
Northeast Mass.	5	8.9
Salem	1	1.8
Total	56	100.0
Dangerous Cargoes		
Revere	13	38.3
Boston	9	26.5
Everett	6	17.6
Chelsea	5	14.7
Medford	1	2.9
Total	34	100.0
Total		
Boston	18	20.0
Medford	15	16.7
Chelsea	13	14.4
Revere	13	14.4
Everett	12	13.3
Maine, N.H. and Canada	7	7.8
Malden	6	6.7
Northeast Mass.	5	5.6
Salem	1	1.1
Total	90	100.0

Table 7
Origins and Destinations of Heavy Through Trucks
Station 2 - Massachusetts Avenue

<u>Origin - Densination</u>	<u>Number</u>	<u>Percent</u>
Boston - Maine, N.H. and Vermont	3	42.8
Boston - Stoneham	1	14.3
Brookline - Maine	1	14.3
Brookline - Medfore	1	14.3
Conn. - Western Suburbs	1	14.3
Total	7	100.0

Table 8
Origins of Heavy Through Trucks (3 axles or more)
Station 3 - Main Street

<u>Origin</u>	<u>Number</u>	<u>Percent</u>
Non-Dangerous Cargoes		
Boston	4	100.0
Total	4	100.0
Dangerous Cargoes		
Chelsea	10	32.3
Revere	10	32.3
Boston	9	29.0
Dedham	1	3.2
Southeast U.S.	1	3.2
Total	31	100.0
Total		
Boston	13	37.2
Chelsea	10	28.6
Revere	10	28.6
Dedham	1	2.8
Southeast U.S.	1	2.8
Total	35	100.0

Table 9
Origins of Heavy Through Trucks
Station 4 - Washington Street (Prospect Street Corridor)

<u>Origin</u>	<u>Number</u>	<u>Percent</u>
Non-Dangerous Cargoes		
Medford	21	36.8
Everett	9	15.8
Boston	7	12.3
Maine & N.H.	7	12.3
Chelsea	5	8.8
Malden	5	8.8
Northeast Mass.	3	5.2
Total	57	100.0
Dangerous Cargoes		
Everett	2	33.3
Boston	1	16.7
Chelsea	1	16.7
Revere	1	16.7
Millis	1	16.7
Total	6	100.0
Total		
Medford	21	33.3
Everett	11	17.5
Boston	8	12.7
Maine and N.H.	7	11.1
Chelsea	6	9.5
Malden	5	7.9
Northeast Mass.	3	4.8
Revere	1	1.6
Millis	1	1.6
Total	63	100.0

Table 10

Origins of Heavy Through Trucks

Station 4 - Washington Street (Somerville Avenue Corridor)

<u>Origin</u>	<u>Number</u>	<u>Percent</u>
Non-Dangerous Cargoes		
Boston	14	70.0
Everett	4	20.0
Canada & N.H.	2	10.0
Total	20	100.0
Dangerous Cargoes		
Chelsea	8	36.4
Boston	6	27.2
Everett	4	18.2
Revere	4	18.2
Total	22	100.0
Total		
Boston	20	47.7
Chelsea	8	19.0
Everett	8	19.0
Revere	4	9.5
Canada & N.H.	2	4.8
Total	42	100.0

Table 11
 Routings of Heavy Through Trucks by Station

<u>Routings</u>	<u>Number of Trucks</u>
Station 1 - River Street	
Non-Dangerous Cargoes	
Prospect Street	48
Mass.-Main-Longfellow Bridge	6
Mass. - Harvard Bridge	1
Mass. - to north	1
Total	56
Dangerous Cargoes	
Mass.-Main-Longfellow Bridge	21
Prospect Street	13
Total	34
Station 2 - Massachusetts Avenue	
Mass-Vasser-McGrath Highway	4
Mass-Route 2	3
Total	7
Station 3 - Main Street	
Non-Dangerous Cargoes	
Mass-Western-Mass Pike	2
Mass-Western to Boston	2
Total	4
Dangerous Cargoes	
Mass-Western-Mass Pike	16
Mass-Western (non Mass Pike)	7
Vasser or Albany - B.U. Bridge	7
Mass-Concord-Route 2	1
Total	31
Station 4 - Washington Street	
Non-Dangerous Cargoes	
Prospect-Western	57
Somerville-Route 2	20
Total	77
Dangerous Cargoes	
Somerville-Route 2	22
Prospect - Western	6
Total	28

Table 12

Routings of Heavy Trucks with Business in Cambridge

<u>Routing</u>	<u>Number of Trucks</u>
Station 1 - River Street	
Right on Putnam Avenue	10
Right on Massachusetts Avenue	8
Business in Central Square	3
Straight through to Prospect	3
Lt. on Putnam	1
Routings unclear	2
Total	27
Station 2- Massachusetts Avenue	
Lt. on Albany or Vasser	7
Straight through on Mass.	2
Right on Vasser	1
Total	10
Station 3 - Main Street	
Mass-Western	5
Lt. on Albany or Vasser	5
Straight through on Mass.	3
Right on Broadway	2
Total	15
Station 4 - Washington Street	
Prospect-Western	3
Prospect-Mass	2
Prospect-Cambridge	1
Somerville - Mass.	3
Total	9
Total Trucks	61



CITY OF CAMBRIDGE

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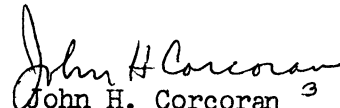
EXECUTIVE DEPARTMENT
JOHN H. CORCORAN
City Manager

September 24, 1973

To the Honorable, the City Council,

I transmit herewith self-explanatory report as prepared by Richard A. Easler of the Transportation section of the Planning and Development Department relative to preliminary results of the recent truck survey.

Very truly yours,


John H. Corcoran³
City Manager

JHC/m

Self-Explanatory report from Mr. Easler
Re: Prelim. results of the recent
truck survey.

In City Council

Sept. 24, 1973

*Referred to the
Transportation
Committee*

*Copy sent to Comm
on Transportation
9/25/73*