Nashua Regional Planning Commission

Brookline-NH 130 Corridor Study

April, 2006

Prepared by the

Nashua Regional Planning Commission

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BROOKLINE-NH 130 CORRIDOR STUDY

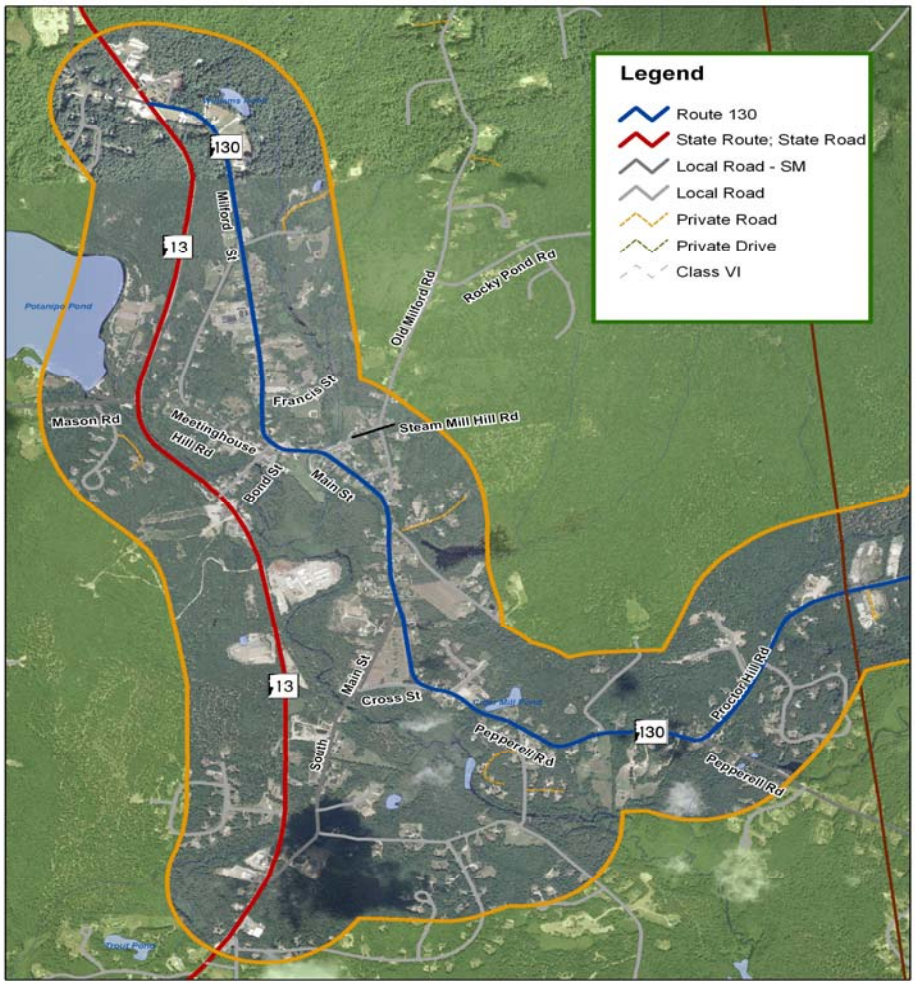
A. BACKGROUND

The Nashua Regional Planning Commission (NRPC) has conducted a comprehensive transportation study of the Brookline segment of the NH 130 corridor. The study has three main goals:

1. To identify and analyze issues along the highway corridor in Brookline.
2. To find solutions for the identified issues for consideration by Town officials and the New Hampshire Department of Transportation.
3. To lay the groundwork for cooperative action on the issues by the Town of Brookline, NH DOT and NRPC.

The study area includes the NH 130 corridor from the Brookline-Hollis town line, westward through the downtown area and continuing to the intersection of NH 130 and NH 13. Meetinghouse Hill Road, Bond Street, Cross Street and South Main Street were included in the study because they are popular cross-town connections to NH 130 and NH 13. The study area is shown on Map 1.

Map 1: Study Area



B. STUDY PROCESS

This study has been developed to provide the public, town staff, as well as elected and appointed officials, with information regarding the impacts on traffic, land use and the environment resulting from future improvements to the traffic circulation system.

Traffic Analysis: The traffic analysis section of the study identifies existing and future traffic conditions in the study area. Data collection has included traffic counts at fourteen locations along the corridor and on secondary roadways. Other data was also gathered, including an inventory of existing sidewalk conditions and a sight distance analysis. The study process included analysis of data, development of a range of possible solutions, prioritization of solutions based on public input and preparation of this report documenting study results.

Land Use and the Environment: The link between traffic, land use and the environment is an important consideration in the development of possible solutions, including potential alternative alignments of NH 130.

Public Input: The study process began with a public meeting at the Brookline Town Hall in October of 2004. The issues identified at the meeting included concerns about the volume and speed of truck traffic in town, limited sight distances, pedestrian safety near Frances Drive, and speeding along the entire corridor, especially near the Richard Maghakian Memorial School. A second public meeting was held in August of 2005 at the Brookline Fire Department meeting room. This meeting was informational in nature. Results of the traffic analysis were presented, the key issues were more fully discussed and potential solutions were proposed. The public was given the opportunity to indicate which alternative solutions they preferred.

C. TRAFFIC ANALYSIS

1. Existing Conditions

Traffic Counts: NRPC staff conducted 24-hour volume counts at 14 locations specifically for this project. Eleven of the counts recorded total volume of traffic only. The other three were classification counts that register volume of traffic, vehicle type, vehicle speed and time of day. For the purposes of this study, NRPC staff has grouped vehicles into three types. Type 1 vehicles include motorcycles, cars, pickup trucks, vans and delivery trucks similar to those used by the United Parcel Service. Type 2 vehicles include busses, and vehicles similar to dump trucks and cement mixer trucks. Type 3 vehicles include trailer trucks and larger vehicles. The locations of the fourteen counts are shown on Map 2 and described below. Table 1 and Figures 1 through 12 summarize the data.

24-Hour Volume Counts:

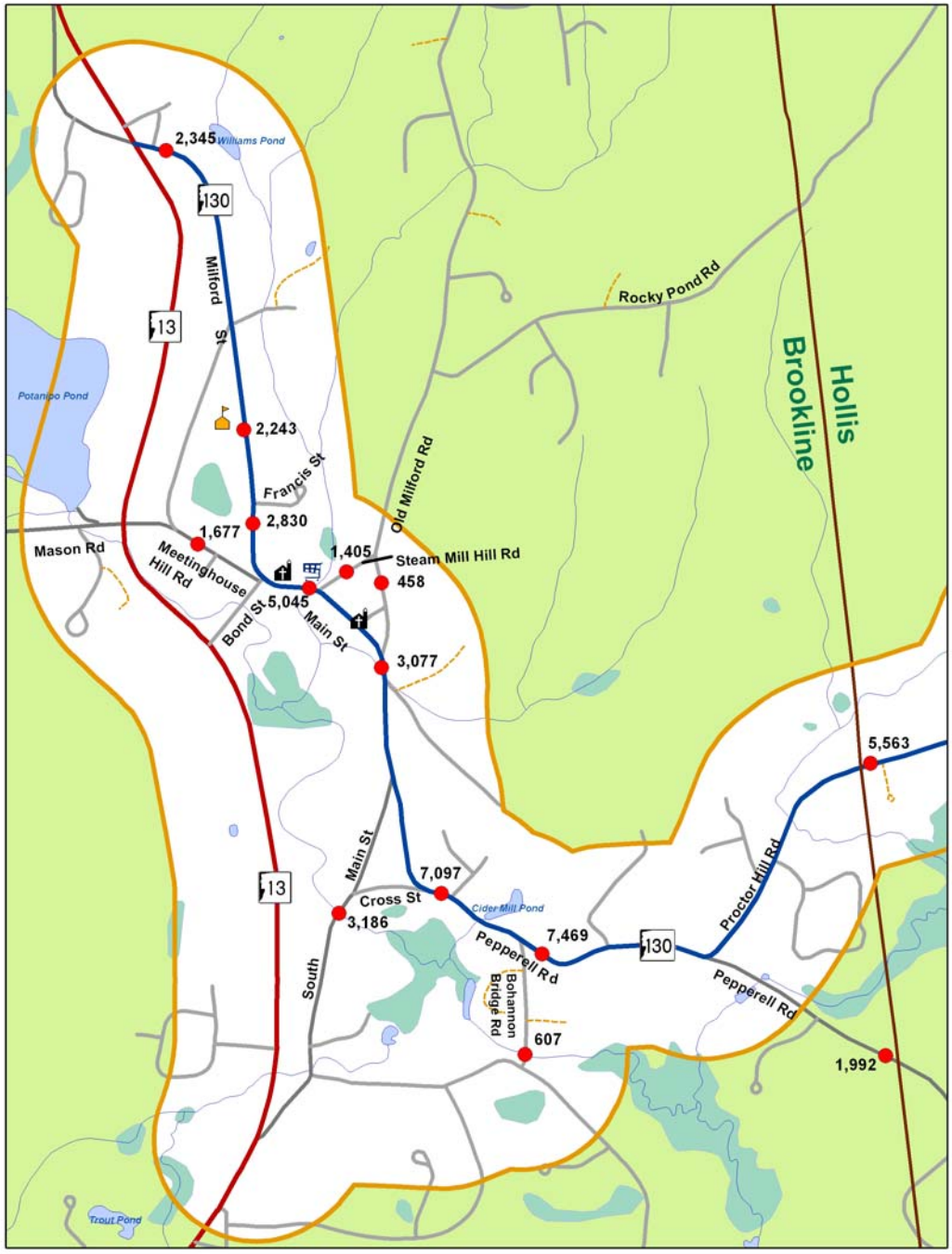
- **NH 130**: The volume of traffic varies along NH 130. The average daily traffic (adt) at the Hollis town line is 5,563. The traffic volume just east of Cross Street is 7,097 adt, which is approximately 28% greater than at the Hollis town line. The volume of traffic just west of Corey Hill Road is 3,077 adt, which is 45% less than the volume at the Hollis town line. The traffic volume just west of Steam Mill Hill Road (near the Village Store) is 5,045 adt, which is 9% less than at the Hollis town line. Further west, the traffic volume in front of the Richard Maghakian Memorial School (RMMS) is 2,243 adt, and the volume just east of NH 13 is 2,345 adt.

- **South Main Street**: The location of this count is just south of the intersection with Cross street. The volume at this location is 3,186 adt.
- **Old Milford Road**: The location of this count is on the one-way segment just to the north of the intersection with NH 130. The volume at this location is 458 adt.
- **Steam Mill Hill Road**: The location of this count is just north of the intersection with NH 130. The volume at this location is 1,405 adt.
- **Meetinghouse Hill Road:** The location of this count is on Meetinghouse Hill Road halfway between NH 130 and NH 13. The volume at this location is 1,677 adt.

Table 1: 24-Hour Volume Counts

Location	Recent Traffic Count		% change as compared to volume at Hollis T/L
NH 130 CORRIDOR	Volume	Year	
NH 130 at Hollis Town Line	5,563	2004	N/A
NH 130 East of Bohannon Bridge Road	7,469	2004	+ 34%
NH 130 East of Cross Road	7,097	2004	+28%
NH 130 West of Corey Hill Road	3,077	2004	- 45%
NH 130 West of Steam Mill Hill Road (@ Village Store)	5,045	2004	- 9%
NH 130 South of Frances Drive	2,830	2004	- 49%
NH 130 in front of Elementary School	2,243	2004	- 60%
NH 130 East of NH 13	2,345	2004	- 58%
OFF NH 130 CORRIDOR			
Pepperell Road @ Hollis Town Line	1,992	2004	N/A
Bohannon Bridge Road North of Oak Hill Road	607	2004	N/A
Old Milford Road South of Steam Mill Hill Road	458	2004	N/A
Steam Mill Hill Road East of NH 130	1,405	2004	N/A
South Main Street South of Cross Road	3,186	2004	N/A
Meetinghouse Hill Road East of NH 13	1,677	2004	N/A

Map 2: Traffic Count Locations



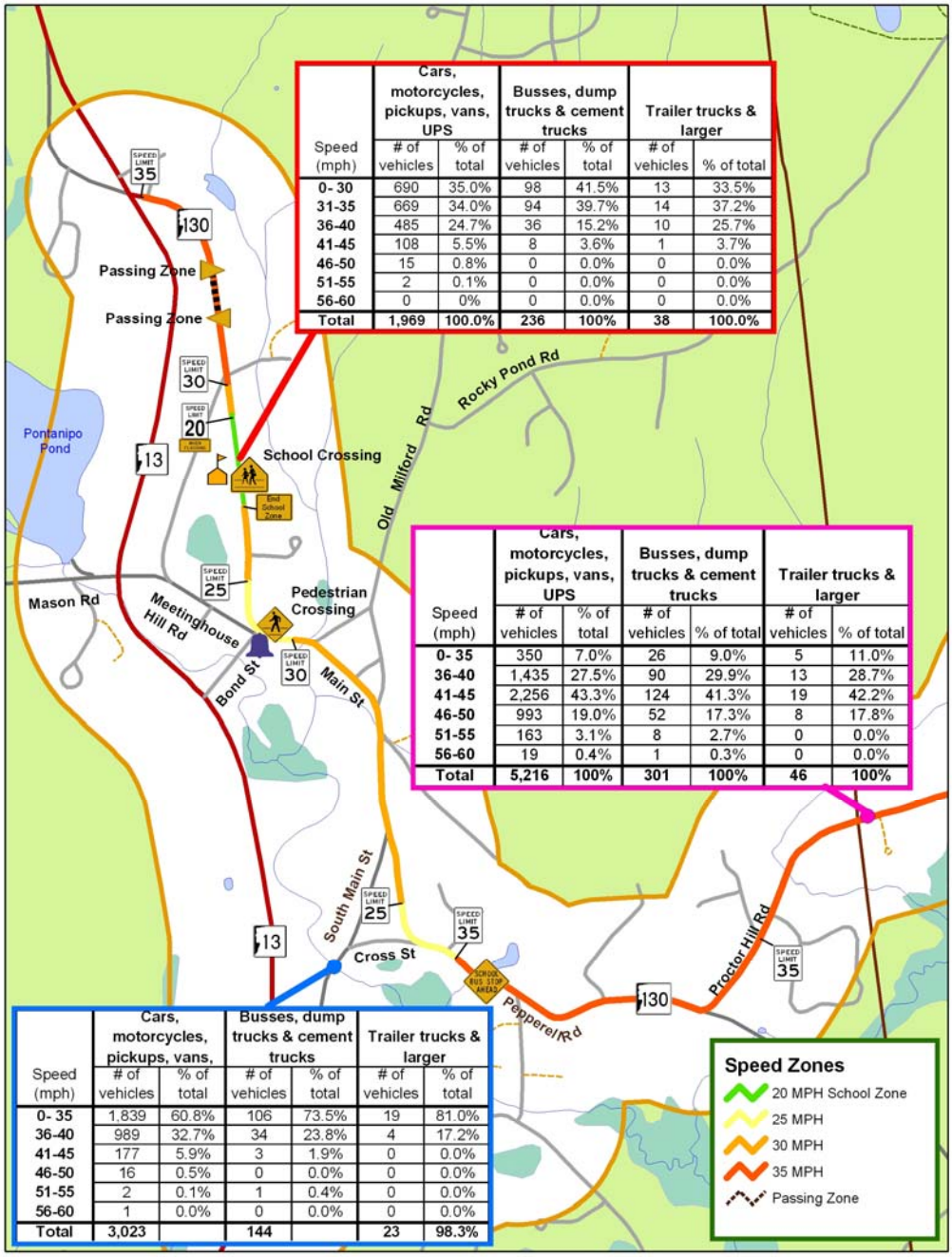
Classification Counts:

- **NH 130 @ Hollis/Brookline Town Line:** The location of this count was at the Hollis/Brookline town line. The average number of vehicles per day was 5,563. Approximately 94% of the traffic volume was Type 1 vehicles, 5% was Type 2 and 1% was Type 3. Further information regarding this location appears on Map 3 as well as in the pages that follow.
- **NH 130 @ Richard Maghakian Memorial School (RMMS):** The location of this count was in front of RMMS. The average number of vehicles per day was 2,243. Approximately 88% of the

traffic volume was Type 1 vehicles, 10% was Type 2 and 2% was Type 3. Further information regarding this location appears on Map 3 as well as in the pages that follow.

- **South Main Street:** The location of this count was at South Main Street just south of the intersection with Cross Street. The average number of vehicles per day was 3,186. Approximately 95% of the traffic volume was Type 1 vehicles, 4% was Type 2 and 1% was Type 3. Further information regarding this location appears on Map 3 as well as in the pages that follow.

Map 3: Classification Count Locations



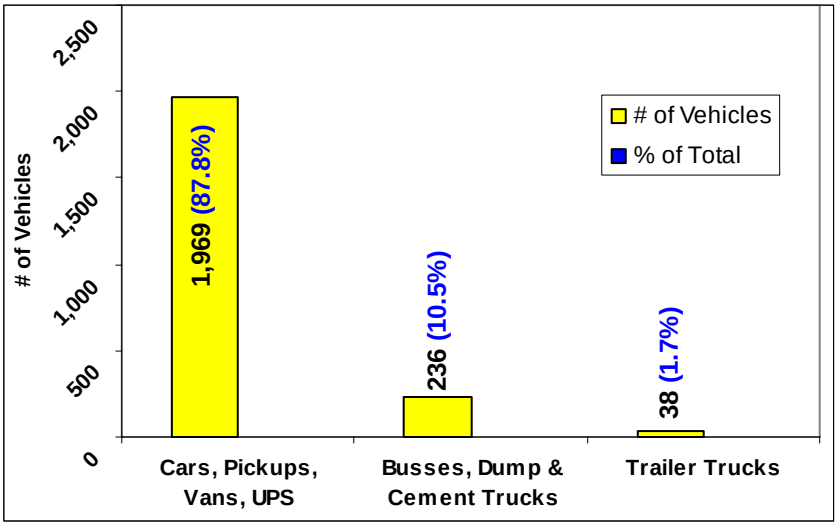
NH 130 @ Richard Maghakian Memorial School (RMMS):

The location for this count was directly in front of the elementary school. Table 2 indicates that the average daily traffic (ADT) at this location is approximately 2,243. Table 2 also indicates that approximately 87.8% percent (1,969 adt) of the traffic volume at this location are Type 1 (cars, pickups, vans) vehicles, 10.5% percent (236 adt) are Type 2 (dump trucks, etc.) vehicles and 1.7% (38 adt) Type 3 vehicles. Figure 1 shows this relationship graphically.

Table 2: @ RMMS

Type of Vehicle	Average Daily Traffic	% of Total
Cars, Pickups, Vans	1,969	87.8%
Dump & Cement Trucks	236	10.5%
Trailer Trucks	38	1.7%
TOTAL	**2,243**	**100%**

Figure 1: Type of Vehicles & Percent of Total (weekday)



Type of Vehicle by Time of Day:

Table 3 shows type of motor vehicle by time of day. Figure 2 summarizes this information for all vehicle types. Figures 3 through 5 separate this information into the three types of vehicles that have been identified for this study.

Table 3: @ RMMS - Type of Vehicles vs. Time of Day (weekday)

Time of Day	Type 1 Cars, Pickups, Vans, UPS	Type 2 Busses, Dump & Cement Trucks	Type 3 Trailer Trucks & Larger	Total
12-1 am	5	0	0	5
1-2 am	3	0	0	3
2-3 am	2	0	0	2
3-4 am	4	0	0	4
4-5 am	7	1	0	7
5-6 am	32	4	0	35
6-7 am	87	6	1	94
7-8 am	124	17	3	144
8-9 am	171	20	3	194
9-10 am	112	21	3	136
10-11 am	97	20	4	121
11-12 am	120	23	4	147
12-1 pm	103	21	4	127
1-2 pm	124	22	4	150
2-3 pm	161	26	4	191
3-4 pm	163	23	3	190
4-5 pm	178	16	2	196
5-6 pm	165	9	2	176
6-7 pm	126	5	0	131
7-8 pm	71	2	1	73
8-9 pm	50	1	1	51
9-10 pm	38	0	0	38
10-11 pm	17	0	0	17
11-12 am	8	0	0	8
Total	**1,969**	**236**	**38**	**2,243**

Figure 2: @ RMMS - All Vehicles vs. Time of Day (weekday)

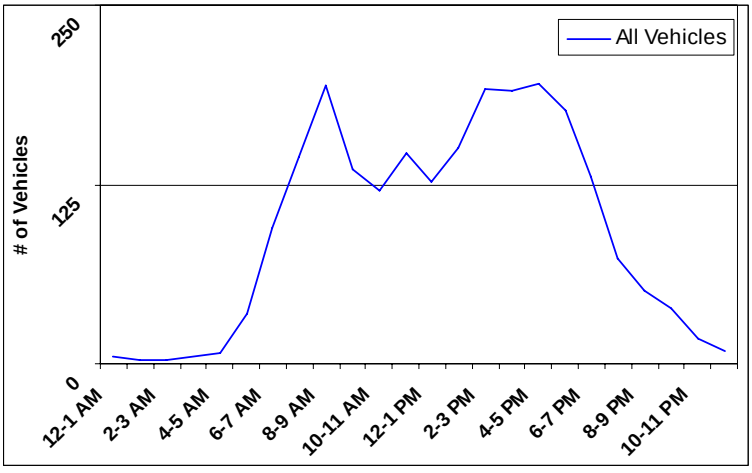


Figure 3: @ RMMS - Type 1 Vehicles vs. Time of Day (weekday)

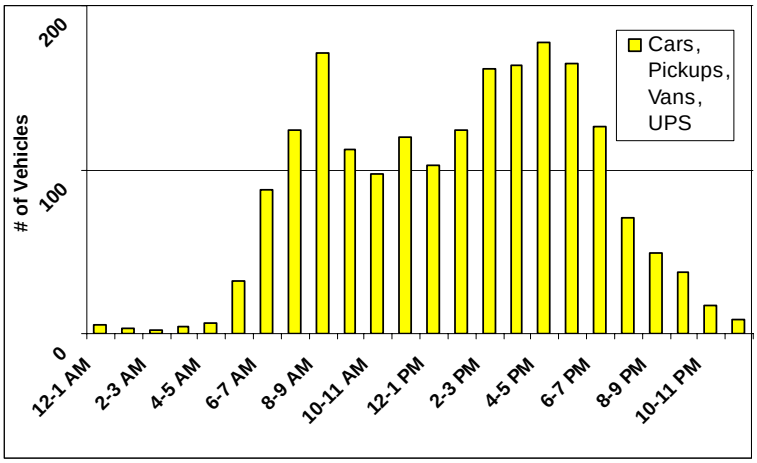


Figure 4: @ RMMS - Type 2 Vehicles vs. Time of Day (weekday)

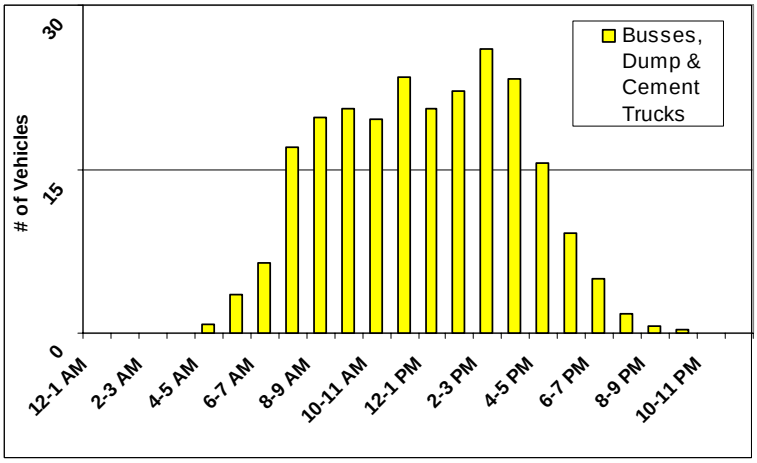
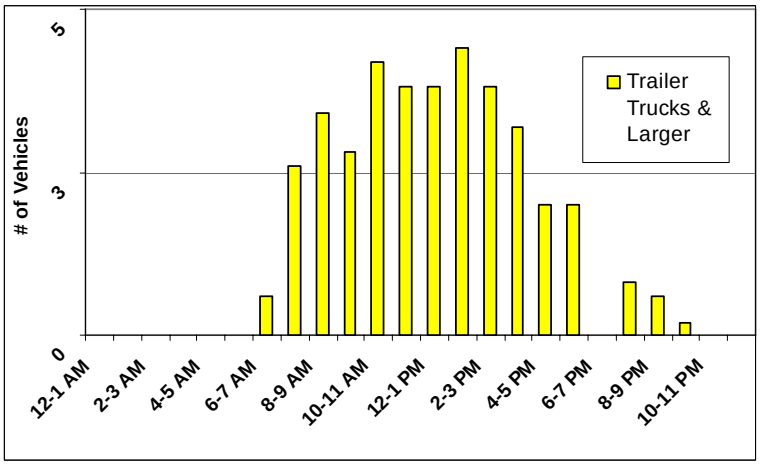


Figure 5: @ RMMS - Type 3 Vehicles vs. Time of Day (weekday)



Vehicle Speed

Table 4 compares the volume of traffic for all vehicle types with the posted speed limit (30 mph) at this location. Figure 6 displays this information graphically. It can be seen that 64.3% of all vehicles exceed the speed limit at this location on an average weekday and 35.7% follow the speed limit.

Table 4: @ RMMS - # of Vehicles vs. Speed Limit

Speed (mph)	# 0f Vehicles	% of Total
< 30 MPH	800	35.7%
> 30 MPH	1,442	64.3%
Total	**2,243**	**100.0%**

Figure 6: @ RMMS - % of Total Vehicles vs. Speed Limit (weekday)

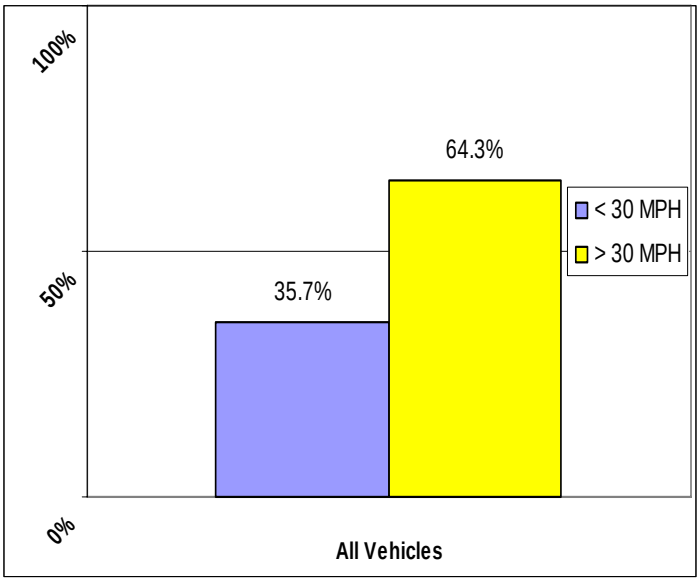


Table 5 compares the type of vehicle with the posted speed limit (30mph) at this location. On an average weekday 65% (1,279 adt) of Type 1 vehicles exceed the speed limit, 58.5% (138 adt) of Type 2 vehicles exceed the speed limit and 66.5% (25 adt) of Type 3 vehicles exceed the speed limit.

Table 5: @ RMMS - Type of Vehicle vs. Speed Limit (weekday)

	Type 1 Cars, motorcycles, pickups, vans, UPS		Type 2 Busses, dump trucks & cement trucks		Type 3 Trailer trucks & larger	
Speed (mph)	# of vehicles	% of total	# of vehicles	% of total	# of vehicles	% of total
< 30 MPH	690	35.0%	98	41.5%	13	33.5%
> 30 MPH	1,279	65.0%	138	58.5%	25	66.5%
Total	**1,969**	**100.0%**	**236**	**100.0%**	**38**	**100.0%**

Figure 7 separates this information into the three types of vehicles that have been identified for this study.

Figure 7: @ RMMS - Type of Vehicle vs. Speed Limit (weekday)

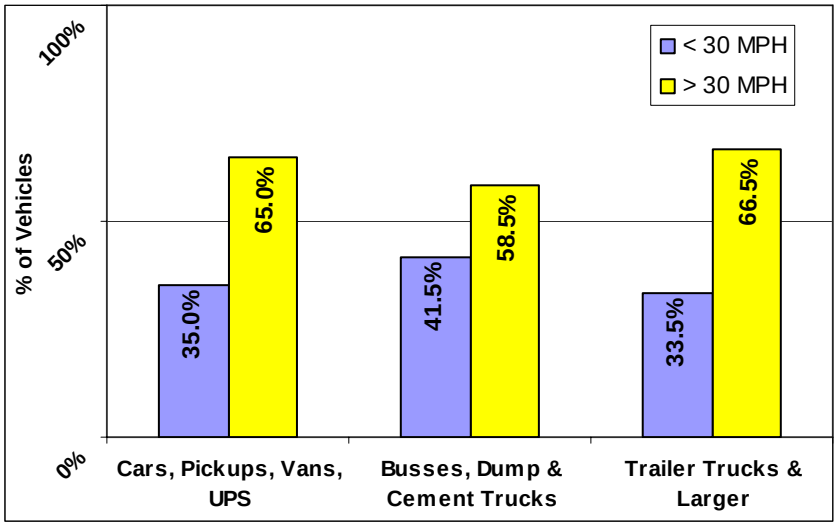


Table 6 breaks down the speed data further. This table indicates that of the Type 1 vehicles that exceed the speed limit at this location, 34.0% travel 31-35 mph, 24.7% travel 36-40 mph, 5.5% travel 41-45 mph, and 0.9% travel greater than 45 mph. Regarding the Type 2 vehicles that exceed the speed limit, 39.7% travel 31-35 mph, 1.2% travel 36-40 mph, and 3.6% travel 41-45 mph. Regarding Type 3 vehicles, 37.2% travel 31-35 mph, 25.7% travel 36-40 mph, and 3.7% travel 41-45 mph.

Table 6: @ RMMS - Type of Vehicle vs. Speed Limit (weekday)

	Type 1 Cars, motorcycles, pickups, vans, UPS		**Type 2 Busses, dump trucks & cement trucks**		**Type 3 Trailer trucks & larger**	
Speed (mph)	# of vehicles	% of total	# of vehicles	% of total	# of vehicles	% of total
0- 30	690	35.0%	98	41.5%	13	33.5%
31-35	669	34.0%	94	39.7%	14	37.2%
36-40	485	24.7%	36	15.2%	10	25.7%
41-45	108	5.5%	8	3.6%	1	3.7%
46-50	15	0.8%	0	0.0%	0	0.0%
51-55	2	0.1%	0	0.0%	0	0.0%
56-60	0	0%	0	0.0%	0	0.0%
Total	1,969	100%	236	100%	38	100%

Finally, Tables 7 and 8 indicate the speed that vehicles travel during the period of time when the flashing "school zone" light operates (8-9AM and 2:30-3:30PM). The speed limit during that time is 20 mph. It can be seen that vehicles do slow down during those times. In fact, during the 8-9AM period, approximately 69% of the vehicles travel below 30mph (the posted speed limit). However, only 36% travel below the flashing "school zone" speed of 20 mph. From 2-4PM, approximately 58% travel below the posted 30 mph speed limit, but only 15% travel below the flashing "school zone" speed of 20 mph.

Table 7: 8-9AM

Speed (mph)	# of vehicles	% of total	Speed (mph)	# of vehicles	% of total
< 30 MPH	133	68.7%	< 20 MPH	70	36.0%
> 30 MPH	61	31.3%	> 20 MPH	124	64.0%
Total	**194**	**100%**	**Total**	**194**	**100%**

Table 8: 2-4PM

Speed (mph)	# of vehicles	% of total	Speed (mph)	# of vehicles	% of total
< 30 MPH	222	58.4%	< 20 MPH	58	15.1%
> 30 MPH	158	41.6%	> 20 MPH	323	84.9%
Total	**381**	**100%**	**Total**	**381**	**100%**

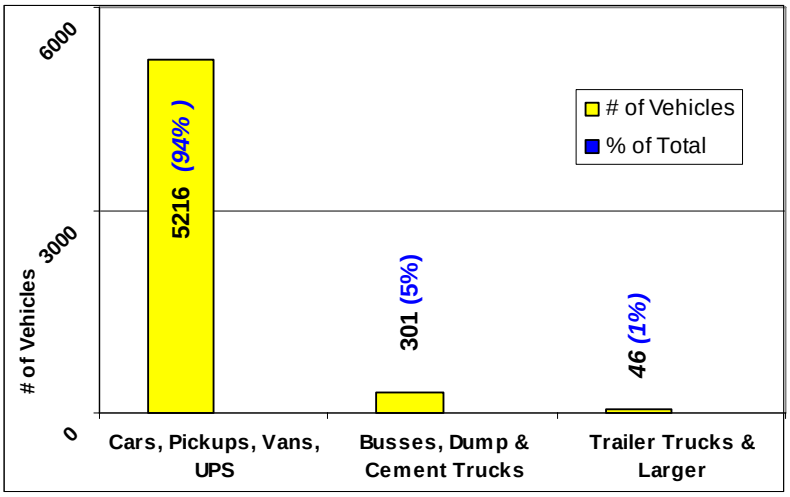
NH 130 @ Hollis/Brookline Town Line:

The location of this count is on NH 130 at the Brookline-Hollis town line. Table 9 indicates that the average daily traffic (ADT) at this location is approximately 5,563. Table 9 also indicates that 94% of the traffic volume at this location are Type 1 vehicles, 5% are Type 2 vehicles and 1% are Type 3 vehicles. Figure 8 shows this relationship graphically.

Table 9: Brookline-Hollis Town Line - Type of Vehicles & Percent of Total (weekday)

Type of Vehicle	Average Daily Traffic	% of Total
Cars, Pickups, Vans, UPS (Type 1)	5,216	94%
Dump & Cement Trucks (Type 2)	301	5%
Trailer Trucks or larger (Type 3)	46	1%
TOTAL	**5,563**	**100%**

Figure 8: Brookline-Hollis Town Line - Type of Vehicles vs. Percent of Total (weekday)



Type of Vehicle by Time of Day

Table 10 shows type of motor vehicle by time of day. Figure 9 summarizes this information for all vehicle types. Figures 10-12 separate this information into the three types of vehicles that have been identified for this study.

Table 10: Brookline-Hollis Town Line - Type of Vehicles vs. Time of Day (weekday)

Time of Day	Type 1 Cars, Pickups, Vans, UPS	Type 2 Busses, Dump & Cement Trucks	Type 3 Trailer Trucks & Larger	Total
12-1 AM	23	0	0	24
1-2 AM	13	1	0	14
2-3 AM	7	0	0	8
3-4 AM	14	2	0	17
4-5 AM	28	1	0	28
5-6 AM	122	8	1	131
6-7 AM	314	21	2	337
7-8 AM	447	24	3	474
8-9 AM	356	26	3	384
9-10 AM	252	25	3	280
10-11 AM	191	17	4	212
11-12 AM	210	16	3	228
12-1 PM	275	22	3	300
1-2 PM	266	22	4	292
2-3 PM	301	21	6	327
3-4 PM	361	25	5	391
4-5 PM	430	22	4	456
5-6 PM	517	18	2	537
6-7 PM	366	11	2	379
7-8 PM	243	7	0	250
8-9 PM	184	5	0	190
9-10 PM	143	3	0	146
10-11 PM	91	2	0	94
11 PM-12 AM	62	1	0	63
Total	**5216**	**301**	**46**	**5563**

Figure 9: Brookline-Hollis Town Line - All Vehicles vs. Time of Day (weekday)

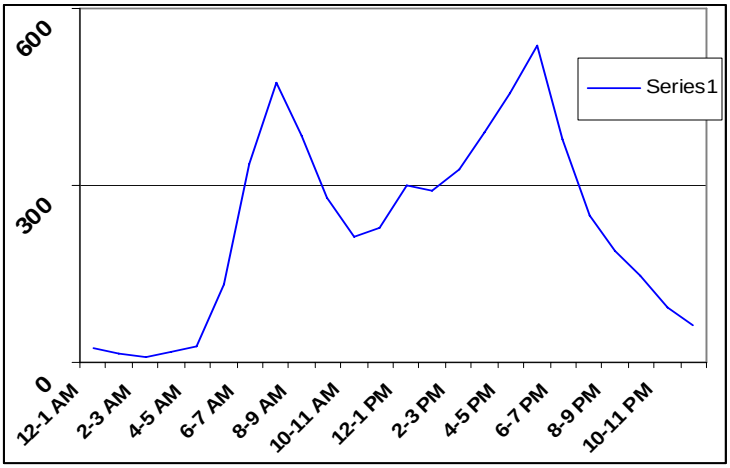


Figure 10: Brookline-Hollis Town Line - Type 1 Vehicles vs. Time of Day (weekday)

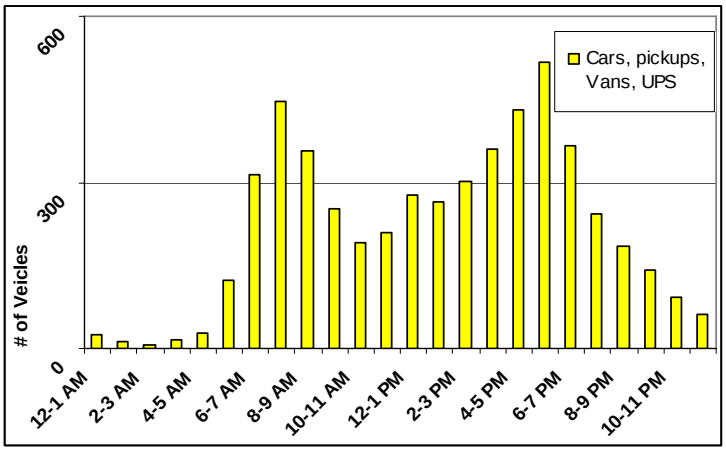


Figure 11: Brookline-Hollis Town Line - Type 2 Vehicles vs. Time of Day (weekday)

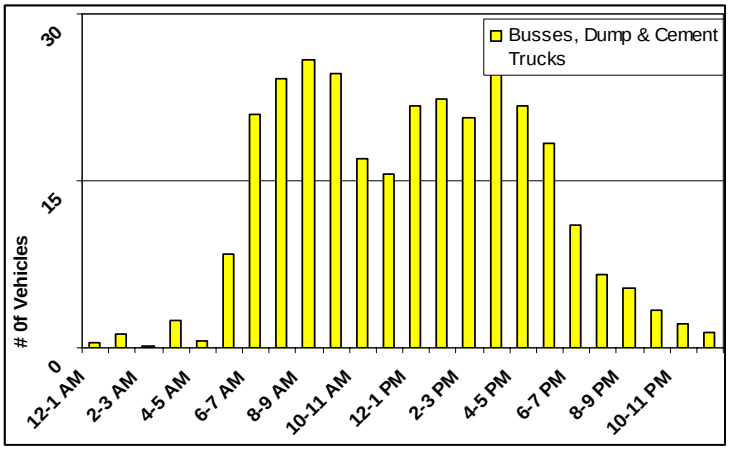
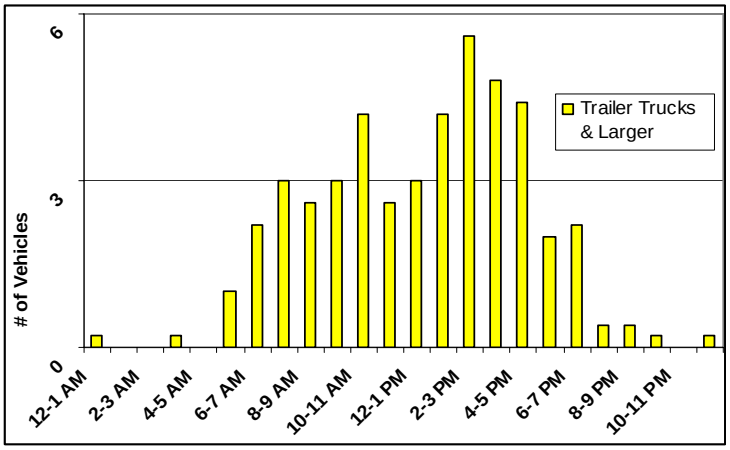


Figure 12: Brookline-Hollis Town Line - Type 3 Vehicles vs. Time of Day (weekday)



Vehicle Speed

Table 11 compares all vehicle types with the posted speed limit of 35 mph at this location. Figure 13 displays this information graphically. It can be seen that 93% of all vehicles exceed the speed limit at this location on an average weekday and 7% obey the speed limit.

Table 11: Brookline-Hollis Town Line - # of Vehicles vs. Speed Limit

Speed (mph)	# of Vehicles	% of Total
< 35 MPH	381	7%
> 35 MPH	5,183	93%
Total	**5,563**	**100%**

Figure 13: Brookline-Hollis Town Line - % of Vehicles Above & Below Speed Limit (weekday)

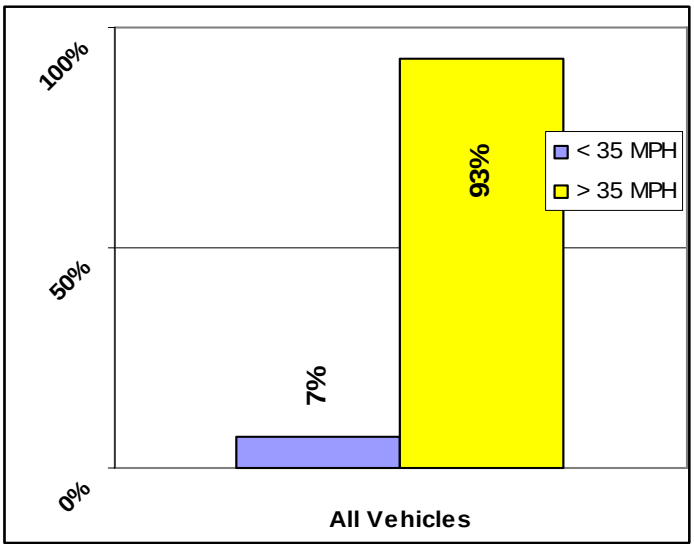


Table 12 compares the type of vehicle with the posted speed limit at this location. It can be seen that 93% (4,866 adt) of Type 1 vehicles exceed the speed limit on an average weekday, 91% (275 adt) of Type 2

vehicles and 89% (41 adt) of Type 3 vehicles. Figure 14 separates this information into the three types of vehicles that have been identified for this study.

Table 12: Brookline-Hollis Town Line - Type of Vehicle vs. Speed Limit (weekday)

	Type 1 Cars, motorcycles, pickups, vans, UPS		Type 2 Busses, dump trucks & cement trucks		Type 3 Trailer trucks & larger	
Speed (mph)	# of vehicles	% of total	# of vehicles	% of total	# of vehicles	% of total
< 35 MPH	350	7%	26	9%	5	11%
> 35 MPH	4,866	93%	275	91%	41	89%
Total	**5,216**	**100%**	**301**	**100%**	**46**	**100%**

Figure 14: Brookline-Hollis Town Line - Type of Vehicle vs. Speed Limit (weekday)

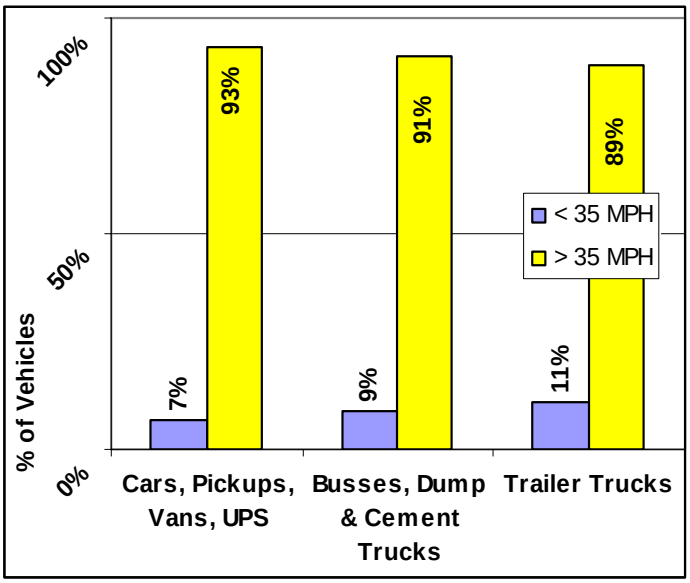


Table 13 breaks down the speed data further. This table indicates that of the Type 1 vehicles that exceed the speed limit at this location, 27.5% travel 36-40 mph, 43.3% travel 41-45 mph, 19.0% travel 46-50 mph, and 3.5% travel greater than 50 mph.

Table 13: Brookline-Hollis Town Line - Type of Vehicle vs. Speed Limit (weekday)

	Type 1 Cars, motorcycles, pickups, vans, UPS		**Type 2 Busses, dump trucks & cement trucks**		**Type 3 Trailer trucks & larger**	
Speed (mph)	# of vehicles	% of total	# of vehicles	% of total	# of vehicles	% of total
0- 35	350	7.0%	26	9.0%	5	11.0%
36-40	1,435	27.5%	90	29.9%	13	28.7%
41-45	2,256	43.3%	124	41.3%	19	42.2%
46-50	993	19.0%	52	17.3%	8	17.8%
51-55	163	3.1%	8	2.7%	0	0%
56-60	19	0.4%	1	0.3%	0	0%
Total	**5,216**	**100%**	**301**	**100%**	**46**	**100%**

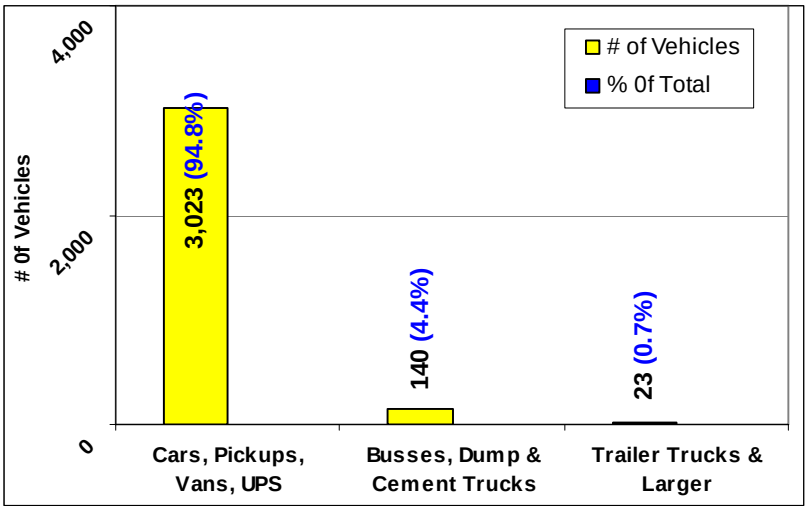
South Main Street:

The location of this count is on South Main Street just south of the intersection with Cross Road. Table 14 indicates that the average daily traffic(ADT) at this location is approximately 3,186. Table 14 also indicates that 95% of the traffic volume at this location are Type 1 vehicles, 4% are Type 2 vehicles and 1% are Type 3 vehicles. Figure 15 shows this relationship graphically.

Table 14: South Main Street - Type of Vehicles & Percent of Total (weekday)

Type of Vehicle	**Average Daily Traffic**	**% of Total**
Cars, Pickups, Vans (Type 1)	3,023	95.0%
Dump & Cement Trucks (Type 2)	140	4.0%
Trailer Trucks and larger (Type 3)	23	1.0%
TOTAL	**3,186**	**100%**

Figure 15: South Main Street - Type of Vehicles & Percent of Total (weekday)



Type of Vehicle by Time of Day

Table 15 shows type of motor vehicle by time of day. Figure 16 summarizes this information for all vehicle types. Figures 17-19 separate this information into the three types of vehicles that have been identified for this study.

Table 15: South Main Street - Type of Vehicles vs. Time of Day (weekday)

Time of Day	Type 1 Cars, Pickups, Vans, UPS	Type 2 Busses, Dump & Cement Trucks	Type 3 Trailer Trucks & Larger	Total
12-1 AM	12	1	0	13
1-2 AM	8	0	0	8
2-3 AM	2	0	0	3
3-4 AM	5	1	0	6
4-5 AM	12	1	0	13
5-6 AM	44	3	0	47
6-7 AM	167	8	1	177
7-8 AM	259	11	2	271
8-9 AM	245	14	2	261
9-10 AM	151	8	1	161
10-11 AM	117	8	2	127
11-12 AM	149	12	1	162
12-1 PM	129	9	1	139
1-2 PM	140	8	3	150
2-3 PM	167	12	1	180
3-4 PM	231	12	2	245
4-5 PM	269	10	2	281
5-6 PM	316	11	2	328
6-7 PM	232	5	1	238
7-8 PM	137	4	0	142
8-9 PM	103	1	0	104
9-10 PM	68	2	0	70
10-11 PM	40	0	0	41
11 PM-12 AM	20	0	0	20
Total	**3,023**	**140**	**23**	**3,186**

Figure 16: South Main Street - All Vehicles vs. Time of Day (weekday)

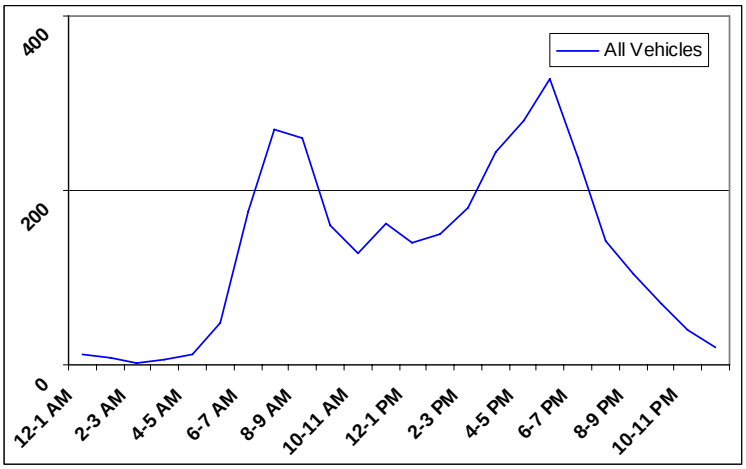


Figure 17: South Main Street - Type 1 Vehicles vs. Time of Day (weekday)

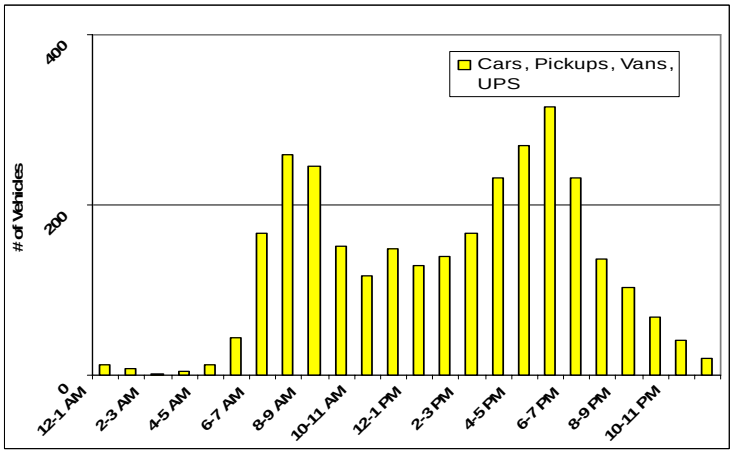


Figure 18: South Main Street - Type 2 Vehicles vs. Time of Day (weekday)

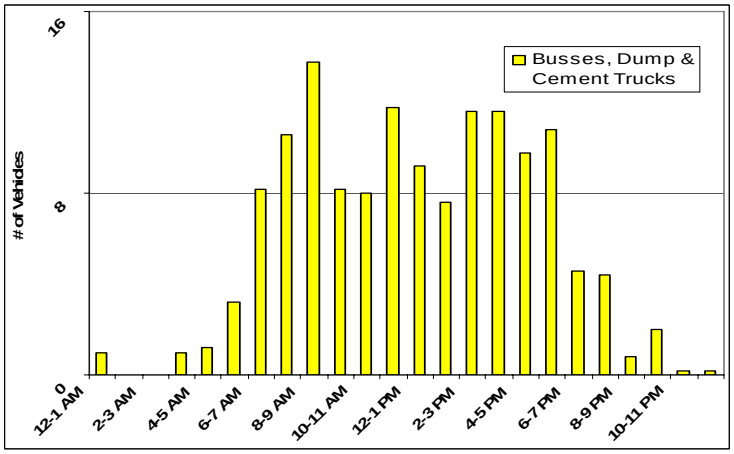
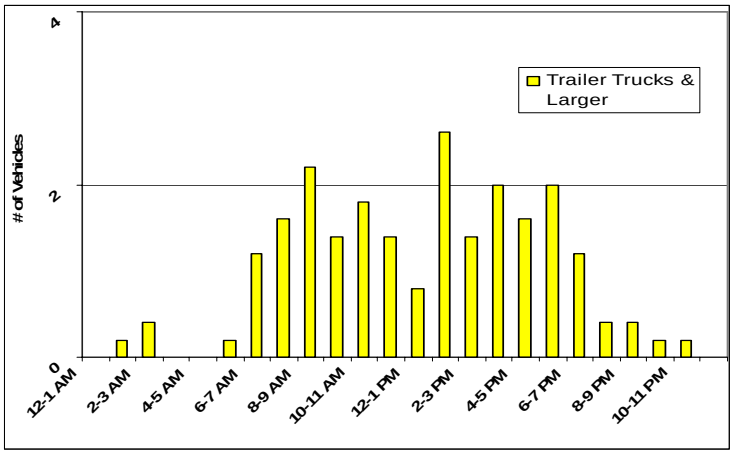


Figure 19: South Main Street - Type 3 Vehicles vs. Time of Day (weekday)



Vehicle Speed

Table 16 compares all vehicle types with the posted speed limit (35 mph) at this location. Figure 20 displays this information graphically. It can be seen that 38.4% of all vehicles exceed the speed limit at this location on an average weekday and 61.6% do not exceed the speed limit.

Table 16: South Main Street - # of Vehicles vs. Speed Limit

Speed (mph)	# of Vehicles	% of Total
< 35 MPH	1,963	61.6%
> 35 MPH	1,223	38.4%
Total	**3,186**	**100%**

Figure 20: South Main Street - % of Vehicles Above & Below Speed Limit (weekday)

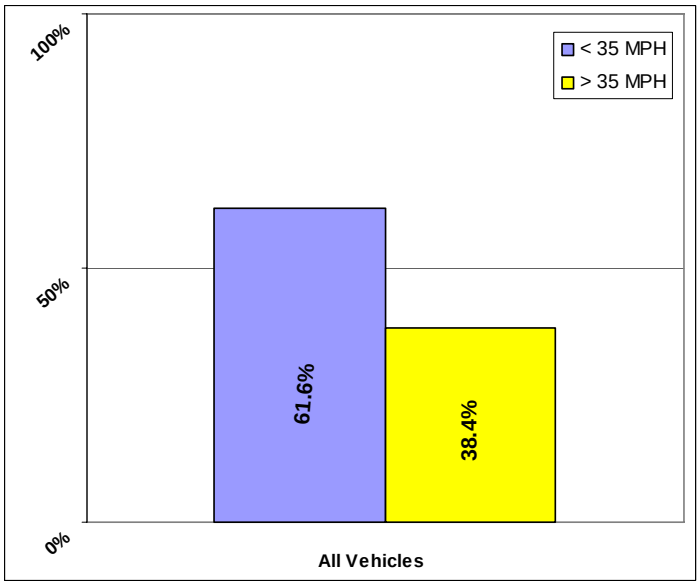


Table 17 compares the type of vehicle with the posted speed limit at this location. It can be seen that 39% (1,185 adt) of Type 1 vehicles exceed the speed limit on an average weekday, 24.3% (34 adt) of Type 2 vehicles exceed the speed limit and 19% (4 adt) of Type 3 vehicles exceed the speed limit. Figure 21 compares the volume of traffic for all vehicle types with the posted speed limit.

Table 17: South Main Street - Type of Vehicle vs. Speed Limit (weekday)

	Type 1 Cars, motorcycles, pickups, vans, UPS		**Type 2 Busses, dump trucks & cement trucks**		**Type 3 Trailer trucks & larger**	
Speed (mph)	# of vehicles	% of total	# of vehicles	% of total	# of vehicles	% of total
< 35 MPH	1,839	60.8%	106	75.5%	19	81.0%
> 35 MPH	1,185	39.2%	34	24.5%	4	19.0%
Total	**3,023**	**100%**	**140**	**100%**	**23**	**100%**

Figure 21: South Main Street - Type of Vehicle vs. Speed Limit (weekday)

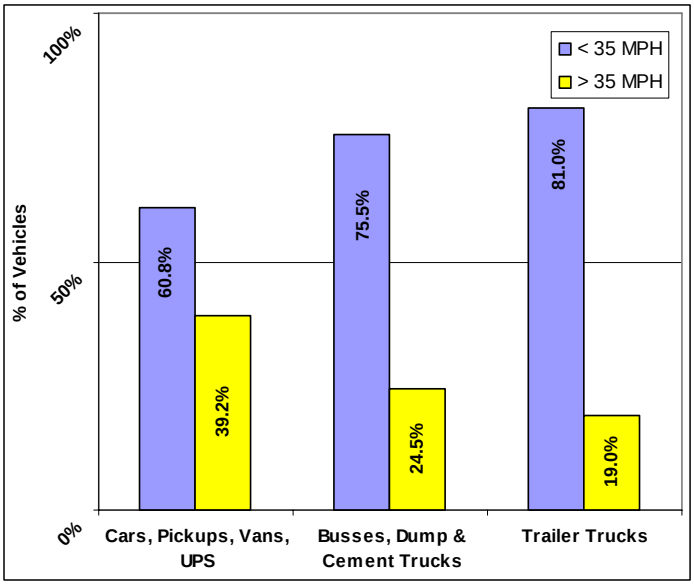


Table 18 breaks down the speed data further. This table indicates that of the Type 1 vehicles that exceed the speed limit at this location, 32.7% travel 36-40 mph, 5.9% travel 41-45 mph, 0.5% travel 46-50 mph, and 0.1% travel greater than 50 mph. Regarding type 2 vehicles, 23.6% travel 36-40 mph and 2.1% travel 41-45 mph. Regarding Type 3 vehicles, 17.4% travel 36-40 mph.

Table 18: South Main Street - Type of Vehicle vs. Speed Limit (weekday)

	Type 1 Cars, motorcycles, pickups, vans, UPS		Type 2 Busses, dump trucks & cement trucks		Type 3 Trailer trucks & larger	
Speed (mph)	# of vehicles	% of total	# of vehicles	% of total	# of vehicles	% of total
0- 35	1,839	60.8%	106	73.6%	19	82.6%
36-40	989	32.7%	34	23.6%	4	17.4%
41-45	177	5.9%	3	2.1%	0	0.0%
46-50	16	0.5%	0	0.0%	0	0.0%
51-55	2	0.1%	1	0.7%	0	0.0%
56-60	1	0.0%	0	0.0%	0	0.0%
Total	**3,023**	**100%**	**144**	**100%**	**23**	**100%**

2. Future Traffic Forecasts

Future traffic volumes were projected to a 20-year horizon, utilizing the NRPC regional traffic model. The traffic model converts land use inputs, specifically the number of housing units, employment and school enrollment, into vehicle trips based on trip generation equations for each specific land use. The trips are then distributed throughout the regional study area and beyond, utilizing a "gravity" model. The future scenario has been developed based on existing land use patterns, local land use policies and zoning, the availability of vacant land and the presence of environmental constraints. The 2025 forecast is illustrated in Table 19.

Table 19: 2025 Traffic Forecasts

	Recent Traffic Count			
Location	**Vehicles per Day**	**Year**	**2025 Forecast**	**% Increase**
NH 130 at Hollis Town Line	5,563	2004	10,170	83%
NH 130 East of Bohannon Bridge Road	7,469	2004	12,287	65%
H 130 East of Cross Road	7,097	2004	11,882	67%
NH 130 West of Corey Hill Road	3,077	2004	4,155	35%
NH 130 West of Steam Mill Hill Road (@ Village Store)	5,045	2004	7,364	46%
NH 130 South of Frances Drive	2,830	2004	2,902	3%
NH 130 in front of Elementary School	2,243	2004	2,212	- 1%
NH 130 East of NH 13	2,345	2004	2,106	- 10%
Pepperell Road @ Hollis Town Line	1,992	2004	2,966	49%
Bohannon Bridge Road North of Oak Hill Road	607	2004	707	16%
Old Milford Road South of Steam Mill Hill Road	458	2004	818	79%
Steam Mill Hill Road East of NH 130	1,405	204	2,289	63%
South Main Street South of Cross Road	3,186	2004	6,078	91%
Meetinghouse Hill Road East of NH 13	1,677	2004	2,484	48%

3. Accident History

Traffic accident data for the years 2000 through 2004 was obtained from the Brookline Police Department. The data was organized by the Police Department into four general locations. Those locations are indicated on Map 4 and summarized in Table 20. The available accident data indicates that for this period of time there were a total of 48 accidents involving 74 people and resulting in 13 injuries.

Map 4: Accident History

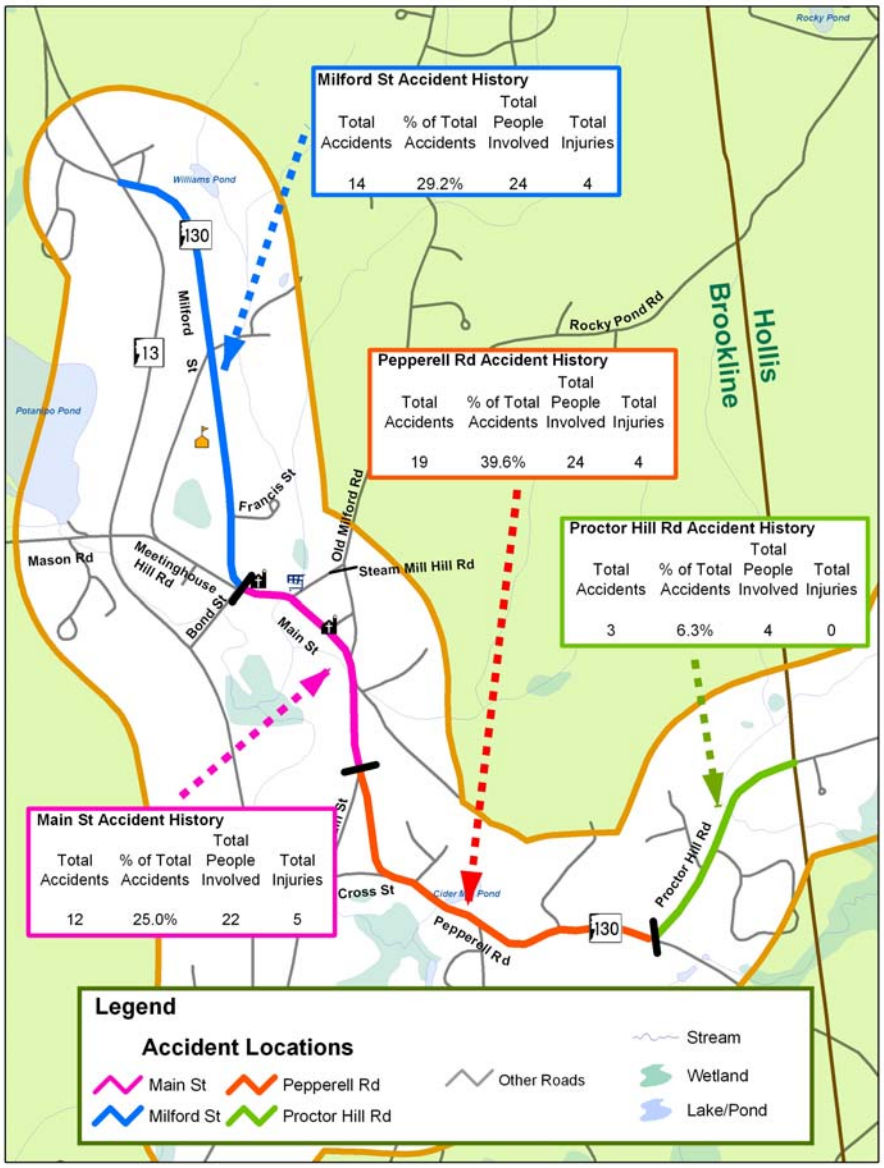


Table 20: Accident Data

	Total # of accidents	% of total accidents	Total # of people Involved	Total injuries
Proctor Hill Rd	3	6%	4	0
Main St	12	25%	22	5
Pepperell Rd	19	40%	24	4
Milford St	14	29%	24	4
Total	**48**	**100%**	**74**	**13**

4. Sight Distance Analysis

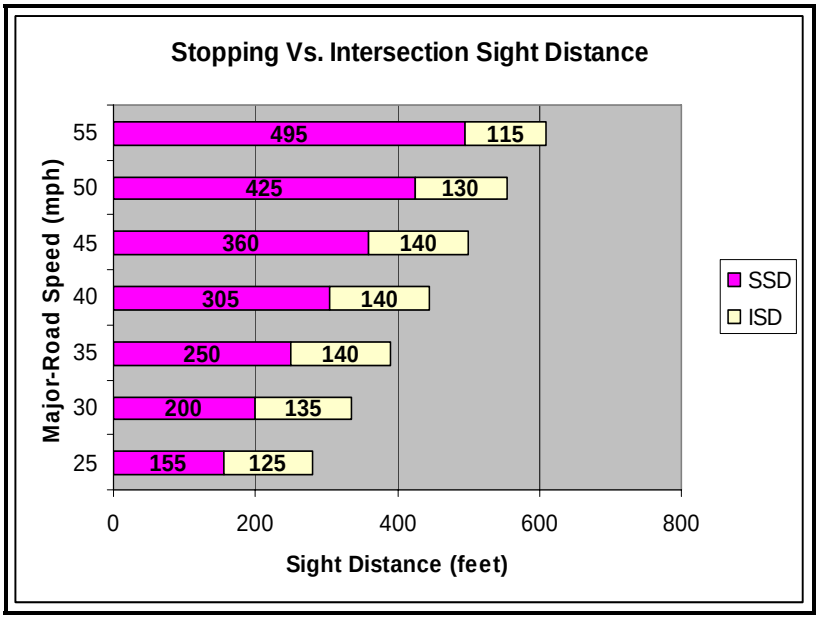
Transportation engineers may apply policies of the American Association of State Highway Transportation Officials (AASHTO) as a guide to sight distance at unsignalized intersections. AASHTO considers stopping sight distance (SSD) and intersection sight distance (ISD).

SSD enables a major-road driver to perceive and react accordingly to a vehicle moving from the minor road to the major road. SSD provides for safety, and is fundamental to intersection operations. SSD should be available along the entire length of the road, not just at intersection approaches.

SSD at an unsignlized intersection facilitates vehicles moving from the minor road to the major road safely, with minimal slowing by major-road vehicles. SSD also provides for the occasional events such as a vehicle moving from the minor road to the major road and then stalling. In this event, vehicles on the major road can stop if necessary.

ISD is typically greater than SSD and can enhance traffic operations for passenger cars on level grades, with ISD for left turns from the minor road under stop-sign control. This information is only representative and does not substitute for an appropriate engineering study. Exceptions can apply and road jurisdictions may have differing policies. Figure 22 indicates SSD and ISD for various roadway speeds.

Figure 22: Sight Distance



NRPC staff measured sight distances at four intersections along the NH 130 corridor. Table 21 summarizes the results. It can be seen that in most cases the SSD for the approaches to the intersections in the study area is adequate. There are two exceptions. One is on the eastbound approach to Bohannon Bridge Road. The speed limit there is 35 mph and therefore should have a minimum SSD of 250 feet. This approach has only 215 feet of sight distance. The other exception is the eastbound approach to Pepperell Road. The speed limit there is also 35 miles per hour and therefore should have a minimum SSD of 250 feet. This approach has only 244 feet of sight distance.

Table 21: Sight Distance Analysis

	Existing Sight Distance (feet)		Suggested SSD (feet)	Difference between existing and suggested*	
Minor Street	Westbound	Eastbound		Westbound	Eastbound
Bohannon Bridge Rd	481	215	250	231	-35
Cross Street	313	407	200	113	207
Pepperell Rd	505	244	250	255	-6
Meeting House Hill Rd	644	420	200	444	220

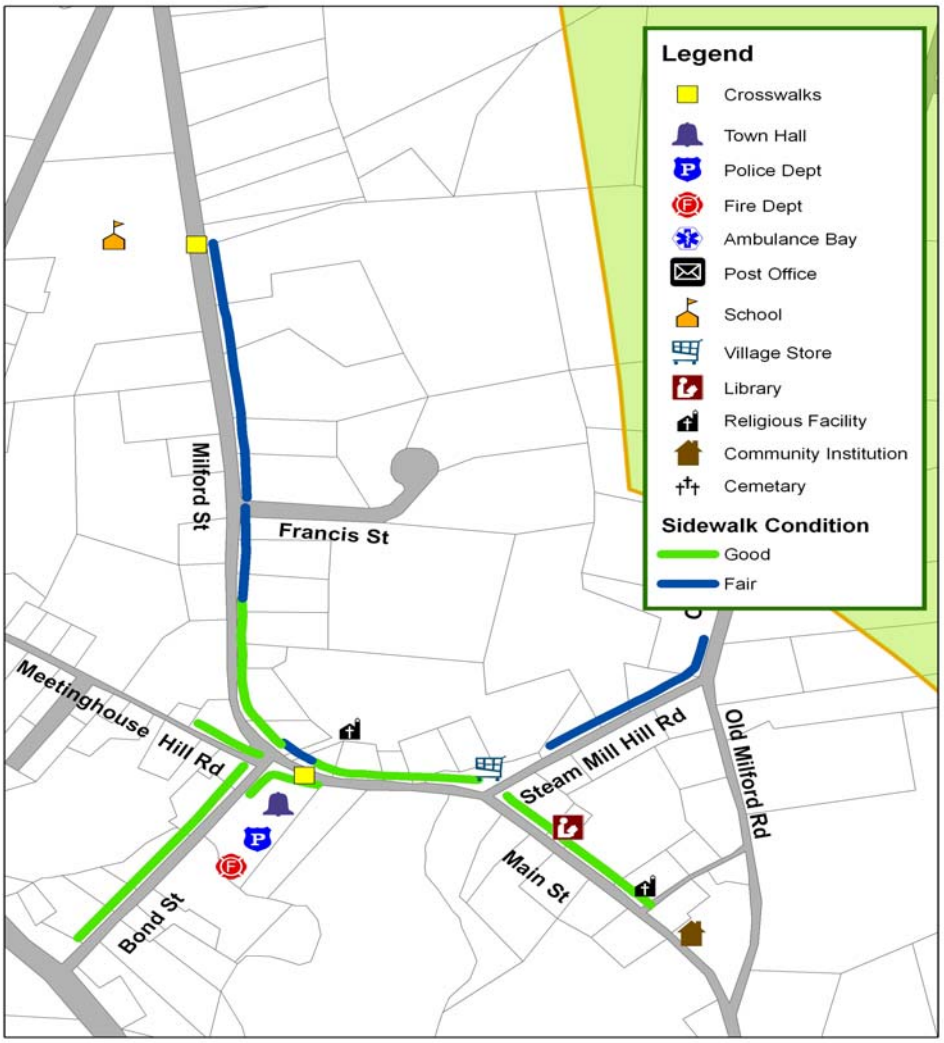
* Negative number means that minimum suggested SSD does not exist.

Looking east at the NH 130-Bohannon Bridge Road intersection

5. Sidewalks

NRPC staff did a physical inventory of the existing sidewalk conditions in town (Map 5). It was determined that sidewalks are in fair to good condition and that none are in poor condition. Residents noted that the most pedestrian traffic in town occurs along the segment of roadway from Frances Drive to the elementary school. It can be seen on the map of sidewalk conditions that this segment is only in fair condition. Also, the sidewalks do not continue on the east side of NH 130 beyond the school crosswalk. Residents also expressed support for a crosswalk on NH 13 between Meetinghouse Hill Road and the beach at Lake Potanipo.

Map 5: Sidewalk Conditons



6. Major Pedestrian Crossings

Residents noted that most pedestrian traffic in town is concentrated between the Village Store and the elementary school. The majority of pedestrian crossings of NH 130 occur near Frances Drive and RMMS as well as at the Town Hall and Congregational Church.

7. Access Management

The most obvious access management issue is the parking lot area of the Village Store. There is one large curb cut which results in a poorly defined entry and exit to the parking lot and a private drive within the store lot.

D. LAND USE AND THE ENVIRONMENT

The link between traffic, land use and the environment is an important consideration in the development of possible solutions, including potential alternative alignments of NH 130. The majority of the zoning along the current alignment of NH 130 is Residential-Agricultural with predominantly single-family residences and a few multi-family units that predated zoning and continue today. With the exception of alternative #1 (Meeting House Hill Road), all proposed routes intersect the Industrial-Commercial District, which runs along portions of NH 13.

The current alignment of NH 130 passes through the village center of Brookline, in close proximity to the fire station, ambulance bay, Town Hall and private residences. Proposed alignments # 3 and # 4 avoid the village center altogether, but alignments # 1 and # 2 do not. Richard Maghakian Memorial School (RMMS) and the Brookline Ball Field currently abut NH 130. There is consequently a significant amount of pedestrian activity along this segment of roadway. There are also fairly congested morning and afternoon peak periods of traffic during the school year when children get dropped off or picked up by school busses and private motor vehicles. Conflicts between through traffic on the state route and elementary school and ball field traffic would be avoided if the proposed alternative alignments of NH 130 were implemented.

The RMMS and Brookline Ball Field, United Church of Christ Congregational and United Methodist Church, Brookline Village Store, Brookline Public Library, Brookline Early Learning Center, Infant Jesus of Prague Mission and the American Legion Post are all located along the potentially affected portion of the NH 130 corridor. These land uses would be bypassed by alternative alignments # 3 and # 4 but not by alignments # 1 and # 2. Pine Grove Cemetery abuts NH 130, Cross Street and South Main Street. This would continue to be the case with the proposed alternatives.

Potential environmental issues along the corridor include noise and vibrations from heavy truck traffic, as well as air and water pollution. The Nissitissit River passes in close proximity of NH 130 and under South Street, which would become NH 130 under Alternatives # 3 and # 4. Other than an increase in traffic, no new environmental issues are created since South Street is already State maintained and road salt is currently being used. Alternatives # 3 and # 4 would eliminate state maintenance of the village center where Village Brook and the majority of the historic structures are located, a number of which have shallow hand-dug wells. The Town of Brookline does not use road salt, so this area would see a benefit of no salt use in reducing potential well contamination. The proposed alternative alignments would abut Lake Potanipo but since NH 13 already does this, these new configurations of NH 130 don't represent a significantly changed impact on this resource. In general, alternative alignments # 3 and # 4 would help to keep through traffic from entering the village center of Brookline and allow the elimination of salt use, thereby mitigating many of these environmental issues.

Please see go to next page to view the Town of Brookline land use map.

Map 6: Town of Brookline Zoning

E. KEY ISSUES

The following key issues were identified through a combination of input from residents of Brookline, analysis of existing traffic conditions and observation of current land uses:

1. Volume and Speed of Truck Traffic (Type 2 & 3 vehicles)

- Residents expressed concern about the number of large trucks that travel through town on a daily basis as well as the speed at which trucks operate. The classification counts indicate that approximately 12% of the motor vehicles that travel past the elementary school are dump trucks or larger, as are 6% at the Hollis-Brookline town line, and 5% on South Main Street. The primary reason for the large percentage of trucks on NH 130 is because it is the primary east-west route in this corner of the region. Trucks that are involved with local home and road construction also add to the volume of truck traffic.

- Residents also expressed concern about the speed of trucks along the corridor. Approximately 71% of the trucks that travel across the Hollis-Brookline town line are between 1 and 10 mph over the speed limit and approximately 20% are at least 11 mph over the speed limit. Only about 7% travel at or below the speed limit. The reason so many vehicles speed at this location is because this segment of roadway has similar characteristics to highways with much higher speed limits. These include long sight lines and few curb cuts. The perception on this segment of roadway is that it is safe to travel at speeds greater than the posted 35mph limit.

- Approximately 26% of the trucks on South Main Street are between 1 and 10 mph over the speed limit. Approximately 74% travel at or below the speed limit. The reason that the speed limit is generally obeyed at this location is because the roadway is narrow and windy and this tends to slow traffic.

- Approximately 55% of the trucks that travel past the elementary school are between 1 and 10 mph over the speed limit and 3.6% are at least 11 mph over the speed limit. This means that nearly 59% of trucks passing by this location exceed the speed limit. Only about 41% travel at or below the speed limit. The reason that the majority of vehicles exceed the speed limit at this location is because this segment of roadway is straight with long sight lines. There is also a passing zone near the school that adds to the perception that increased speeds are acceptable.

2. Speed of Cars, Pickups, Vans and UPS (Type 1) vehicles

- The speed of Type 1 vehicles is also an issue. Approximately 71% of Type 1 vehicles travel between 1 and 10 mph over the speed limit at the Hollis-Brookline town line and 23% at least 11 mph over the limit. Only 7% of vehicles travel at or below the limit. As noted above, the reason so many vehicles speed at this location is because this segment of roadway has similar characteristics to highways with much higher speed limits. These include long sight lines and few curb cuts. The perception on this segment of roadway is that it is safe to travel at speeds greater than the posted 35 mph limit.

- Approximately 39% of the vehicles travel between 1 and 10 mph over the speed limit on South Main Street. 61% percent travel at or below the limit. The reason that the speed limit is generally obeyed at this location is because the roadway is narrow and windy which tends to slow traffic.

- Approximately 59% of Type 1 vehicles travel between 1 and 10 mph over the speed limit in front of the elementary school and 6% at least 11 mph over the limit. Only 35% travel at or below the limit. The reason so many vehicles speed at this location is the same as for trucks; this segment of roadway has similar characteristics to highways with higher speed limits. One example is the fact that the roadway is very straight near the school and there are fairly long sight lines. There is also a passing zone near the school that adds to the perception that increased speeds are acceptable.

3. Sight Distance

There are two intersections where the minimum suggested sight distance does not exist. They are the eastbound approach to Bohannon Bridge Road and the eastbound approach to Pepperell Road.

4. Sidewalk Conditions

NRPC staff did a physical inventory of the existing sidewalk conditions in town. It was determined that sidewalks are in fair to good condition and that none are in poor condition. It can be seen on the map (Map 5) of sidewalk conditions that the segment between Frances Drive and the elementary school is in only fair condition, and it happens that most of the pedestrian traffic in town occurs along this segment of sidewalk. Also, the sidewalk does not continue on the east side of NH 130 beyond the school crosswalk. Some residents also expressed support for a crosswalk on NH 13 between Meetinghouse Hill Road and the beach at Lake Potanipo.

5. Regulations that Safeguard School Zones

NHDOT regulates school zone safety on state routes based on two criteria. The first is based on RSA 265-60 which allows a reduction speed in school zones 45 minutes prior to the beginning of school and for 45 minutes after school closes. The second criteria allows for enhanced school zone signs and assumes that those signs are Manual of Uniform Traffic Control Devices (MUTCD)[1] compliant.

6. Intersections

There are several intersections along the corridor that are configured poorly:

- *NH 130/Cross Street*. Cross Street meets NH 130 at an awkward angle on a major curve in NH 130. As a result, the turn from westbound NH 130 onto Cross Street is a relatively difficult maneuver.
- *NH 130/South Main Street*. South Main Street also meets NH 130 at an awkward angle. The turn from South Main Street onto westbound NH 130 is therefore difficult.
- *NH 130/Bond Street/Meetinghouse Hill Road*. These two roads also meet at an awkward angle resulting in potential conflicts between vehicles.

F. SUGGESTED ALTERNATIVES

The following alternatives address the key issues that were identified during the course of this study.

Key Issue/alternative: Volume of truck traffic on NH 130. There are local and regional land uses that generate truck traffic. There are two options for dealing with this reality. One is to accept that trucks are going to continue to be a presence on NH 130 and to plan for them. The other option is to exclude truck traffic all together. NH 130 is a State route which means that trucks cannot be excluded. For trucks to be prohibited NHDOT would have to agree to re-designate NH 130 as a local (Brookline) route. The town would then have the right to limit truck traffic if it so desired. This would also mean that the Town of Brookline would be responsible for maintenance and repairs of the new segment of local roadway. Also, even if trucks that merely pass through Brookline to non-local destinations were somehow eliminated from NH130, trucks that provide services to local citizens and businesses would still have to travel local roads.

In certain circumstances NHDOT will re-designate a State route. However, federal regulations require the NHDOT to provide numbered state routes in order to facilitate interstate commerce, which means that NH130 will continue to exist in some form. It is therefore *unlikely* that NHDOT would be receptive to the idea of re-designating NH130 in Brookline unless viable alternatives could be developed. NRPC

[1] American Association of State Highway Transportation officials (AASHTO) Manual of Uniform Traffic Control Devices.

staff has identified four possible alternatives to the existing configuration of NH130. They are described below and indicated on Map 7.

- ***Alternative #1; Meetinghouse Hill Road:*** In this scenario the Milford Road segment of NH 130 is re-designated as a local route, and Meetinghouse Hill Road becomes NH 130. Main Street, Pepperell Road and Proctor Hill Road continue to be designated as NH 130. The advantage to this alternative is that through truck traffic could potentially be eliminated from passing in front of the elementary school and the Brookline ball field, which would decrease wear and tear on the roadway and improve safety. The disadvantage to this alternative is that truck traffic would then pass through a residential neighborhood on a previously local street (Meetinghouse Hill Road). This alternative would also require reconfiguration of the NH 13/Meetinghouse Hill Road intersection and possibly a traffic signal, in part because of the steep grade on Meetinghouse Hill Road. The Main Street/Meetinghouse Hill Road/Bond Street intersection would also become problematic because trucks that currently continue west on the Milford Street section of NH 130 would need to turn left in front of oncoming traffic in order to continue west to NH13 via Meetinghouse Hill Road. The intersection of NH130 (main Street) and Meeting House Hill Road would therefore also need to be reconfigured. An additional issue is that the Town would be required to take over the cost and responsibility of maintaining the 1.2 mile long Milford Road segment of the "former" NH 130.
  - Approximate cost: of maintaining 1.2 miles of roadway: $15,000 per year.
  - Approximate cost of reconfiguring Bond Street/Meeting House Hill Road/NH130: $250,000.

- ***Alternative #2; Bond Street:*** In this scenario the Milford Road segment of NH 130 is re-designated as a local route, and Bond Street becomes NH 130. Main Street, Pepperell Road and Proctor Hill Road continue to be designated as NH 130. The advantage to this alternative is similar to Alternative #1 in that truck traffic could be eliminated from passing in front of the elementary school and the Brookline ball field. The disadvantages are similar as well. The Bond Street/NH 13 intersection would need to be reconfigured, with a southbound NH 13 left turn lane added, at a minimum. As in Alternative #1, the Main Street/Meetinghouse Hill Road/Bond Street intersection would need to be reconfigured and again, the Town would be required to take over the cost and responsibility of maintaining the 1.2 mile-long Milford Road segment of the "former" NH 130.
  - Approximate cost of maintaining 1.2 miles of roadway: $15,000 per year.
  - Approximate cost of reconfiguring Bond Street/Meeting House Hill Road/NH130: $250,000.

- ***Alternative #3; South Street "cut through":*** In this scenario the Milford Street and Main Street segments, as well as part of the Pepperell Road segment of NH 130 would be re-designated as local routes. Cross Street and part of South Main Street become NH130. There would also be a short (approximately one-tenth of a mile) connection between South Main and NH13 that would begin on South Main Street just south of the Nissitissit River Bridge and head directly west to connect with NH13. The advantage of this scenario is that through truck traffic could be eliminated from downtown Brookline altogether as well as from passing in front of the elementary school and ball field. The disadvantage is that this would be a costly alternative because new intersections would need to be constructed at NH13 and on South Main Street. The one-tenth of a mile connection between South Main Street and NH13 would also have to be constructed from scratch. Right of way issues would need to be addressed. The intersection of Cross Street and NH130 would also require reconfiguration, and the Town would be required to take over the cost of maintaining the former NH130 from the intersection of Cross Street all the way to where NH130 currently intersects NH13 (2.2 miles).
  - Approximate cost of maintaining 2.2 miles of roadway: $25,000 per year.
  - Approximate cost of constructing new section of roadway between South Main Street and NH130: $1,000,000 +.

- Approximate cost of constructing new intersections at South Street and at NH13: $250,000.

- ***Alternative #4; Cross Street/South Main Stree/NH13:*** In this scenario the Milford Street and Main Street segments, as well as part of the Pepperell Road segment of NH 130 are re-designated as local routes and Cross Street/South Main Street become NH 130. As in Alternative # 3, the advantage to this scenario is that through truck traffic could be eliminated from downtown Brookline altogether and also from passing by the elementary school and ball field. The disadvantages are that southbound truck traffic on NH 13 would be required to travel all the way to the intersection of South Main Street and NH 13 in order to continue east. This intersection and the Cross Street intersection with NH130 would also need to be reconfigured. Again, the Town would be required to take over the cost and responsibility of maintaining the Milford Street and Main Street segments of the "former" NH 130 (2.2 miles).
  - Approximate cost of maintaining 2.2 miles of roadway: $25,000 per year.
  - Approximate cost of reconfiguring the intersection of NH13 and South Main Street: $150,000.
  - Approximate cost to reconfigure intersection of NH130 and Cross Street: $150,000.

- ***Alternative #5; Preserve the Existing Alignment and add Traffic Calming Measures:*** In this scenario the existing alignment of NH 130 is preserved, but improvements are made to calm traffic along the corridor. The objective of traffic calming measures is to reduce the adverse effects of motor vehicles on pedestrians, bicyclists and neighborhoods in general. This usually involves reducing vehicle speeds, providing more space for pedestrians and bicyclists and improving the visual appearance of the local environment. The most effective measures for reducing vehicle speeds involve vertical shifts in the roadway such as speed bumps, speed tables and raised crosswalks. These measures are dependent upon spacing for their effectiveness. At a spacing of 120 -180 feet, speeds can be reduced to approximately 20 mph. Studies have shown that traffic calming can reduce accidents by up to 40% and have a significant impact on reducing the severity of accidents. Corridor-wide traffic calming seeks to calm both main roads and residential roads, but vertical shifts on main roads are not always appropriate. Techniques for calming traffic in the downtown area of Brookline will therefore differ somewhat from techniques along segments of NH 130 that are outside of town. The following improvements are recommended.

  Near Richard Maghakian Elementary School
  - Remove the passing zone just north of the elementary school.
  - Pavement markings should be applied to the surface of NH 130 that indicate a school zone is being entered (responsibility of NHDOT).
  - Install grooves in pavement to notify motorists that they are entering a school zone.
  - Speed tables should be installed near the approaches to the school crosswalk. They should extend the full width of the travel way. Their length should be sufficient to accommodate the full wheel base of school busses in order to reduce passenger discomfort.
  - Upgrade the crosswalk that is near the elementary school to include a pedestrian-actuated stop signal and planted bump-outs. This crosswalk should continue to be marked with the brightest material allowable and should continue to include a supplemental crosswalk device (a portable "people in crosswalk" sign). The crosswalk should also be raised slightly above the surrounding pavement.
  - Enlist the help of the Brookline Police Department to aggressively enforce traffic and parking laws (including warnings and citations) during the first two weeks of school each fall and also develop a strategy for enforcement during the rest of the year.
  - Street-scaping near the school will also help to calm traffic. This could include street furniture, landscaping and lighting.
  - A gateway specifically designed to announce entry into the school zone will supplement the pavement markings and grooved pavement recommended earlier. Signage, landscaping,

granite posts and other markers will alert motorists that they are entering into the school zone and they should adjust there driving styles accordingly.

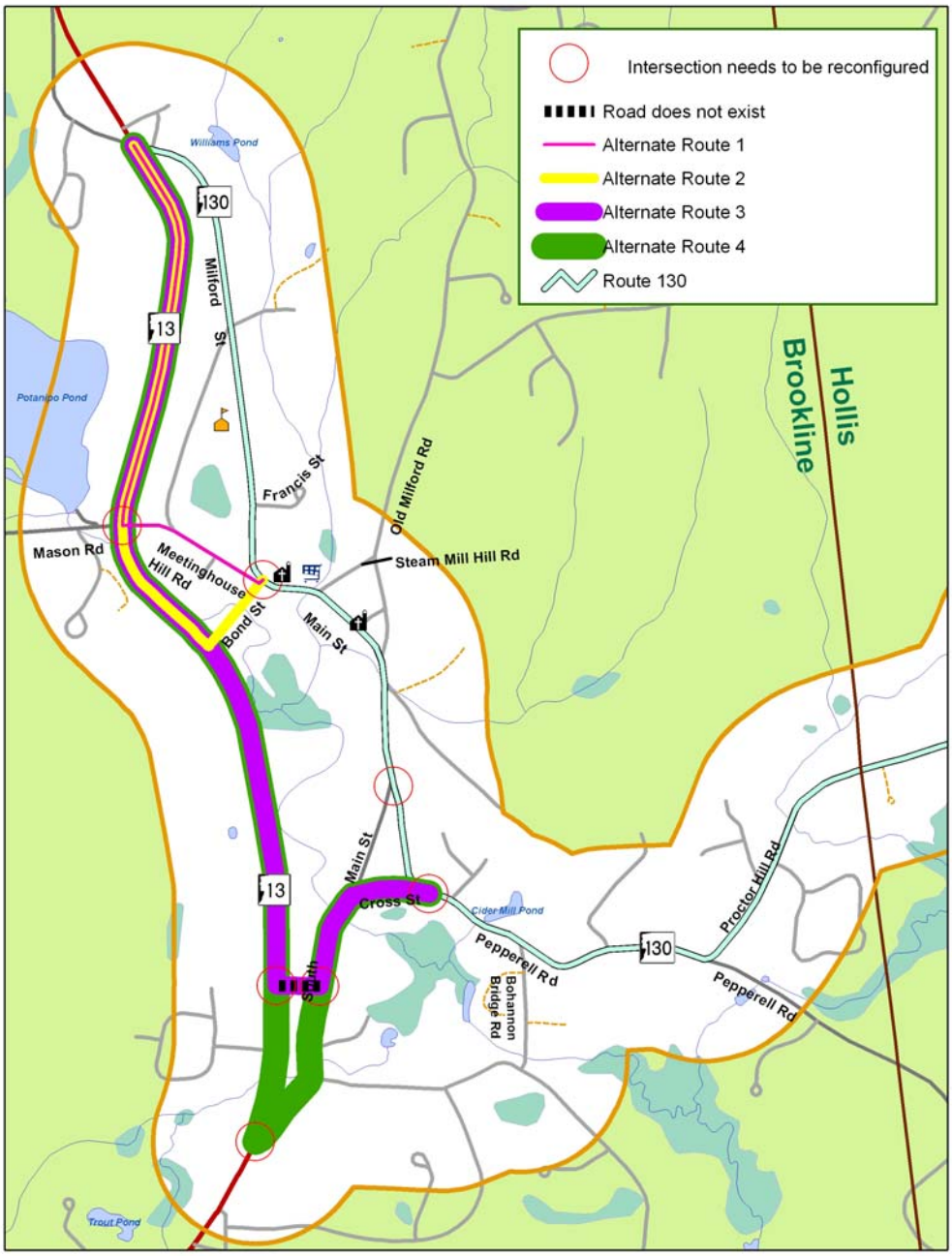
In the Downtown Area

- Pavement markings should be applied near any approach to a crosswalk in order to draw motorist's attention to the crosswalk (responsibility of Town).
- All crosswalks should include planted bump outs where practical.

Outside of the Downtown Area

- In addition to traffic law enforcement near the elementary school, the Brookline Police Department should aggressively enforce traffic and parking laws (including warnings and citations) throughout the corridor.
- In a similar fashion to the downtown area, crosswalks throughout the corridor should include planted bump outs as well as the brightest pavement markings allowed.
- In addition to school-specific gateways, it is recommended that gateway landscaping be installed at key locations throughout the corridor, signaling the transition from NH 130 to the local street system and welcoming visitors to the town. Gateways with signage, landscaping, granite posts and other markers alert motorists that they are entering into a village center and should adjust there driving styles accordingly.

Map 7: Alternative Routes



Additional Intersection Improvements: There are intersections along NH 130 that are poorly configured and could be improved. Doing so would increase safety along the corridor and improve the flow of traffic.

- Reconfigure Bond Street/Meetinghouse Hill Road/NH 130 intersection.
- Reconfigure NH 130/Cross Street/South Main Street intersection - Cross Street is a major cut-through for westbound NH 130 motorists who wish to continue south on NH 13. Northbound NH 13 motorists who wish to continue east on NH 130 also use Cross Street as a cut-through. The NH 130/Cross Street intersection is dangerous for two reasons. The first is because the intersection occurs at a very sharp curve in NH 130, and the second is that Cross Street meets NH

130 at a sharp angle. The NH 130/South Main Street intersection is also problematic because South Main Street intersects NH 130 at a sharp angle. This allows eastbound vehicles on NH 130 to turn right onto South Main Street at a fairly high rate of speed.

A solution to this problem is to realign South Main Street so that it intersects NH130 at a right angle to form a traditional "T" intersection. This would be safer and more efficient than the current sharp angle intersection. It may also be possible to realign the Cross Street-NH130 intersection in the same manner.

- Approximate cost to reconfigure intersection of NH130 and Cross Street: $150,000.
- Approximate cost to reconfigure intersection of NH130 and South Main Street: $150,000.

Another solution that has been suggested by some citizens of Brookline is to make Cross Street one-way in the eastbound direction, and to realign South Main Street so that it meets NH 130 at a right angle to form a traditional "T" intersection. South Main Street would remain a two-way street. Westbound traffic on NH 130 would no longer be allowed to turn left onto Cross Street. Instead, westbound NH 130 motorists wishing to cut across to southbound NH 13 would be able to turn left onto South Main Street at the newly configured "T" intersection. Eastbound traffic on Cross Street would be allowed to turn east (right) onto NH 130 but not west (left).

Key Issue/Alternative: Speed of cars and trucks on NH 130. The analysis indicated that a significant number of vehicles do exceed the speed limit at the three locations studied. Approximately 64% of vehicles that pass in front of the elementary school exceed the speed limit. The reason for this is that this segment of roadway is straight with good visibility which creates the perception that higher speeds are appropriate. There is also a passing zone just to the north of the school zone which should be removed. The most significant segment where excessive speed is a factor is at the Hollis-Brookline border where 93% of vehicles exceed the speed limit. This is true because this segment of the road has the feel of a 50 mph highway yet the speed limit is 35mph. Vehicles also must transition here from the 45 mph zone that is just east of this location. It is conceivable that this segment of roadway could support higher speed limit than 35mph. NH DOT should determine the speed at which the 80th percentile of vehicles is traveling. The smallest number of violations of the speed limit occurs at the South Main Street location where around 38% of vehicles exceed the speed limit. The reason is that the road is narrow and curvy, which tends to slow people down.

Alternatives: Implement traffic calming measures near the Richard Maghakian Elementary School *and throughout the corridor* through improved signage, pavement markings, and other measures. The objective of traffic calming is to achieve slower motor vehicle speeds, reduce motor vehicle collision frequency and severity, create safer and more attractive streets and improve the real and perceived safety for non-motorized users of the street. The following are specific measures that could be taken in the NH130 corridor:

- Remove the passing zone that is just north of the elementary school
- Pavement markings should be applied to the surface of NH 130 that indicate a school zone is being entered (responsibility of NHDOT),
- Pavement markings should applied near any approach to a crosswalk in order to draw motorist's attention to the crosswalk (responsibility of Town),
- Upgrade the crosswalk that is near the elementary school to include a pedestrian-actuated stop signal and planted bump-outs. This crosswalk should continue to be marked with the brightest material allowable and should continue to include a supplemental crosswalk device (a portable "people in crosswalk" sign); it should also be raised slightly above the surrounding pavement.

- Enlist the help of the Brookline Police Department to aggressively enforce traffic and parking laws (including warnings and citations) during the first two weeks of school each fall and develop a strategy for enforcement during the rest of the year.
- Other crosswalks throughout the corridor should include planted bump outs as well as the brightest pavement markings allowed.
- Street-scaping near the school and elsewhere will also help to calm traffic. This could include street furniture, landscaping and lighting. Gateways with signage, landscaping, granite posts and other markers alert motorists that they are entering into a village center and should adjust there driving styles accordingly.

Key Issue/Alternative: Sight Distance. There are two intersections where the minimum suggested safe sight distance does not exist. Those intersections are the eastbound approach to Bohannon Bridge Road and the eastbound approach to Pepperell Road

Alternative: In both cases it may be possible to improve sight distances by cutting back vegetation on the approaches to these intersections.

Key Issue/Alternative: Sidewalk conditions. The sidewalks that exist in town are generally in good condition. Residents noted that a significant amount of pedestrian traffic occurs between Bond Street/Meetinghouse Hill Road to the elementary school and beyond. This segment is one of the few that is in only fair condition, primarily because of drainage issues. Residents noted that pedestrian access to Potanipo Lake could be improved. Alternatives are described below and shown on Map 8.

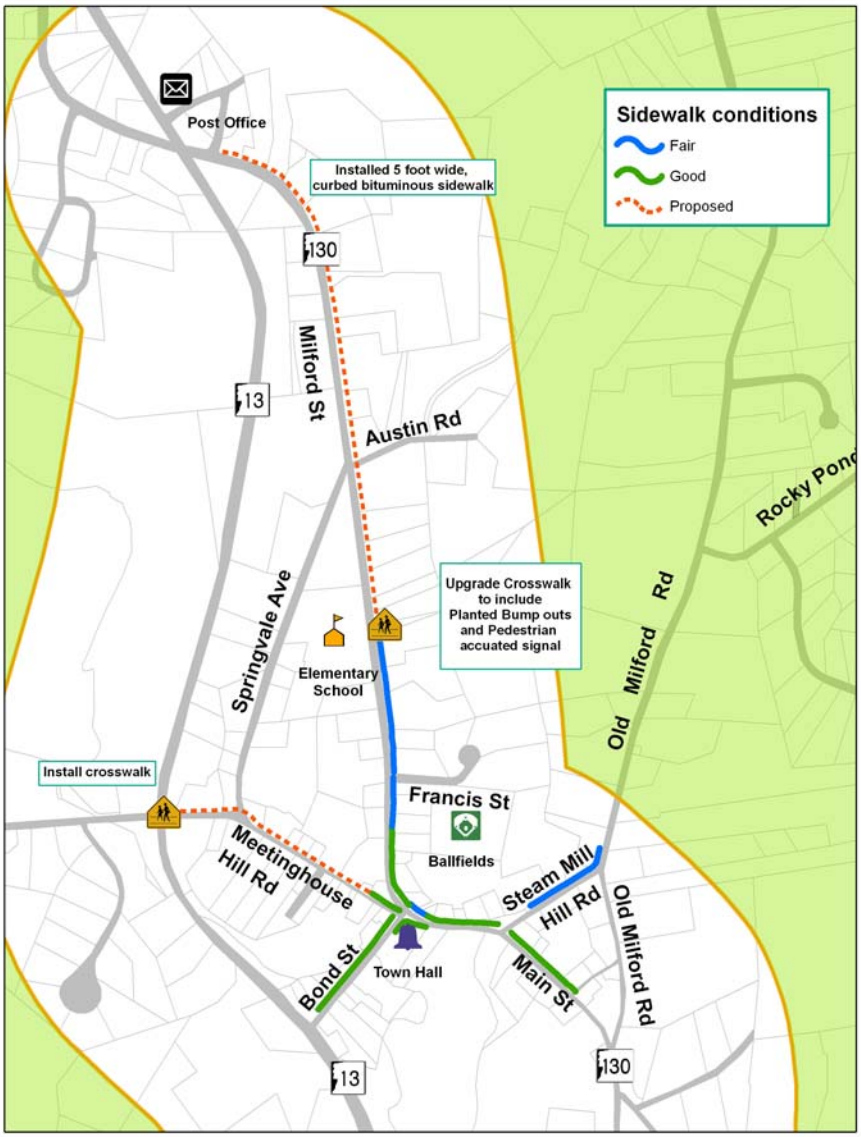
Alternative: Extend sidewalk (5' wide bituminous with curb) on east side of the Milford Street section of NH130 all the way to the Brookline Post Office. Enhance crosswalk in front of elementary school to include pedestrian actuated signal, planted bump outs and raised surface.
Approximate Cost: $500,000.

Alternative: Improve drainage and repave sidewalk between Frances Drive and the elementary school.
Approximate cost: $75,000.

Alternative: Extend sidewalk (5' wide bituminous with curb) on north side of Meetinghouse Hill Road all the way to NH 13 and provide crosswalk to assist pedestrians in crossing NH 13.
Approximate cost: $150,000.

See map on next page

Map 8: Sidewalk Improvements



G. PUBLIC INPUT

A public meeting was held at the Brookline Town Hall at 7pm on October 14th 2004. The purpose of the meeting was to gather public input regarding traffic issues along the NH 130 corridor in Brookline. The meeting was publicized in the Hollis-Brookline Journal, the local Cable TV channel and a notice was posted at the Town Hall. Flyers were also posted at the Village Store. There were about 20 Brookline residents in attendance.

The meeting was called to order by Frank Lukovits, the Planning Board Chair. Steve Williams, NRPC Executive Director, gave an overview of the study objectives and process. Staff from NRPC then presented a geographic overview of the NH 130 corridor that included a discussion of historic traffic counts and other information. The public was then invited to comment on traffic conditions along the corridor.

The issues that were identified by Brookline residents included:

- Volume and speed of traffic;
- Large percentage of truck traffic including large dump trucks, tractor trailers and construction trucks;
- Pedestrian safety, especially between Frances Drive and the Richard Maghakian Memorial School, as well as the crossing of NH 13 from Meeting House Hill Road to Lake Potanipo;
- Blind curve just west of Village Store making for dangerous egress from a private driveway;
- Vehicles don't observe lower speed limits in "downtown" area.

Steve Williams described that the next steps in the process would include a second public meeting when NRPC has completed its draft report. Alternative solutions would be identified and presented to the public for their consideration. The final report would include a prioritized list of possible solutions.

A second public meeting was held on Wednesday, August 24th, 2005 from 6:30-8:30pm at the Brookline Fire Department public meeting room. The meeting was advertised in advance in the Hollis-Brookline Journal, on the local cable channel, Town of Brookline web site and NRPC website. Advertising flyers were also developed and placed in various public locations around town, including the transfer station, library, Village Store and Town Hall. Approximately fifty Brookline residents attended the meeting.

This second meeting was designed to present data that NRPC had gathered during the study process and to present alternative solutions to the key issues that had been identified. Those citizens in attendance where encouraged to express their preferred solutions on the maps that were displayed around the room. Alternative solutions were grouped into three distinct categories; NH 130 Alignment Alternatives, Sidewalk Improvement Alternatives and Intersection Improvement Alternatives. The following is a discussion of Brookline resident's preferences for these alternatives.

NH 130 ALIGNMENT ALTERNATIVES

Maps were displayed that showed the five alternate alignments of NH 130 including the existing alignment. The alternatives are explained on pages 29-30. The public was given the opportunity to identify preferred alternatives. The following alignments were presented for consideration:

- Alternative #1: Meetinghouse Hill Road
- Alternative #2: Bond Street
- Alternative #3: South Main Street Cut Through
- Alternative #4: Cross Street-South Main Street-NH 13
- Alternative #5: Preserve Existing Alignment

Twenty nine residents preferred Alternative 5 (existing alignment, including possible traffic calming measures and increased enforcement of speed limits) as described on page 30. Twelve residents preferred Alternative 3 (South Main Street "cut-through") as described on page 30. This alternative would require the construction of a new section of roadway between NH 13 and South Main Street. The remaining alternatives were each preferred by three residents or less.

SIDEWALK IMPROVEMENT ALTERNATIVES

Residents were also given the opportunity to indicate their preference for one of three possible sidewalk improvement projects that are described on page 30. The following options were presented for consideration:

- Extend sidewalks along north side of Meetinghouse Hill Road and add a crosswalk at intersection of Route 13 and Meetinghouse Hill Road.

- Extend sidewalks along the east side of Milford Street beyond the elementary school.
- Improve drainage along the existing sidewalk between Bond Street and the Brookline ball field.

Twenty eight residents preferred extending sidewalks along Meetinghouse Hill Road, eleven preferred extending sidewalks along Milford Street to the Post Office area, and six residents preferred improving the existing sidewalks that currently extend along the east side of Milford Street from Bond Street to the Brookline ball field.

INTERSECTION IMPROVEMENT ALTERNATIVES

Residents were also given the opportunity to indicate their preference for possible intersection improvements throughout town. These improvements are explained on pages 31-32. The following options were presented for consideration

- Reconfigure Cross St -NH 130 intersection
- Reconfigure Bond St-Meetinghouse Hill Rd
- Reconfigure South Main St-NH 13 intersection

Thirty six residents preferred reconfiguring the Cross Street-NH 130 intersection, 6 residents preferred improving the Bond Street-Meetinghouse Hill Road intersection and 4 residents preferred improving the South Main Street-NH 13 intersection.

Those who attended the meeting were also encouraged to provide written comments regarding the study process. A summary of comments includes the following observations:

- Six residents expressed concern about the safety implications of an alternative alignment of NH 130 to South Main Street. Specifically, the concern was about the safety of funneling additional traffic onto South Main Street.
- Four residents expressed general safety concerns about NH 13.
- Three residents expressed concern about the accuracy of the data presented in the plan.
- Two residents commented that Brookline is a growing town and increased traffic should be expected.

MW/kmb

#304-11

APPENDIX A
PUBLIC COMMENTS

BROOKLINE-NH 130 CORRIDOR STUDY

COMMENTS & SUGGESTIONS

Please use the space below to note any issues or concerns that were not addressed this evening:

What ARE the Statistics for Accidents and traffic flow for South MAIN St?

BROOKLINE-NH 130 CORRIDOR STUDY

COMMENTS & SUGGESTIONS

Please use the space below to note any issues or concerns that were not addressed this evening:

Why are there no stats for accidents at S. Main / Rt. 13 intersection?

Why are there no stats for traffic from S. Main / Rt 13 to Crossroad?

Both items would have provided a more informed decision.

BROOKLINE-NH 130 CORRIDOR STUDY

COMMENTS & SUGGESTIONS

Please use the space below to note any issues or concerns that were not addressed this evening:

I CERTAINLY APPRECIATE THE ENORMOUS WORK AND COMMITMENT THAT WAS OBVIOUSLY EXPENDED IN THIS 130 ANALYSIS AND RECOMMENDATIONS.!!
IS THERE A RECOMMENDATION OF WHOM I MIGHT CONTACT TO GET SOME ATTENTION ALSO PAID TO MASON ROAD ? I WOULD SUBMIT THAT IT IS PROBABLY THE THIRD MOST TRAVELED ROAD IN BROOKLINE AND HAS ALL THE SAME PROBLEMS AS 130 — BOAT LAUNCH AND TOWN BEACH JUST OFF OF ROUTE 13, PEDESTRIANS, TRUCKS, SPEEDERS.... PLEASE — ANY SUGGESTIONS TO FIX THIS ~~POTENTIAL~~ FATALITY-WAITING-TO-HAPPEN SITUATION WOULD BE WELCOMED!
THANKS IN ADVANCE,
JOHN KRAMARCZYK 6 MASON ROAD
JOHNKRAMARCZYK@CHARTER.NET

BROOKLINE-NH 130 CORRIDOR STUDY

COMMENTS & SUGGESTIONS

Please use the space below to note any issues or concerns that were not addressed this evening:

Try routing Alt #3 further north on S. Main St. perhaps thru the former Tessenden Industrial Park to Rt 13
Sidewalk on Milford St at sharp curve should be rated as "DANGER" not good

BROOKLINE-NH 130 CORRIDOR STUDY

COMMENTS & SUGGESTIONS

Please use the space below to note any issues or concerns that were not addressed this evening:

(A) 10-12% of trucks passing the elementary school as compared to 88-90% of cars passing is not a logical percentage. Wrong choice of words, misleading the public.

(B) It would be more accurate to detail the five years accident history by vehicle type. Maybe it would show more accidents by motorcycles than cars (Example)

BROOKLINE-NH 130 CORRIDOR STUDY

COMMENTS & SUGGESTIONS

Please use the space below to note any issues or concerns that were not addressed this evening:

We must think Crew Rd. to So. Main St. is a good alternative

BROOKLINE-NH 130 CORRIDOR STUDY

COMMENTS & SUGGESTIONS

Please use the space below to note any issues or concerns that were not addressed this evening:

Pepperell Rd + Cross Rd intersection is extremely hazardous.

Traffic speed on Rt. 13 is too high!

Need light for pedestrian crossing Rt. 13

BROOKLINE-NH 130 CORRIDOR STUDY

COMMENTS & SUGGESTIONS

Please use the space below to note any issues or concerns that were not addressed this evening:

130 should go straight down cross rd and straight to Rt 13. no truck or car wants to go so far South to then go North.

3 does not solve the problem.

BROOKLINE-NH 130 CORRIDOR STUDY

COMMENTS & SUGGESTIONS

Please use the space below to note any issues or concerns that were not addressed this evening:

I am unable to put to words my frustration with this charade. According to the data provided at this meeting truck traffic makes up only 5 percent of ve on rt. 130. Certainly a negligable amount not wo of this attention. People need to realize the town is growing, and with a little luck will continue to thi With growth comes traffic. A fact of life indeed

BEN SENTER

BROOKLINE-NH 130 CORRIDOR STUDY

COMMENTS & SUGGESTIONS

Please use the space below to note any issues or concerns that were not addressed this evening:

Re: Alt. Rte 3 — Any crossing from Rte. 13 to S. Main St. would increase the number of roads + driveways in an already dangerous area. The former Fessenden mill location had a gated driveway as part of their site plan. Now that Weatherwise owns the property, the gate has been removed. Now not only do Weatherwise vehicles enter onto S. Main St, others use it as a cut through between Rte. 13 + S. Main St. How can this be?

Alice Buckner 5 Averill Rd ph: 672-5951
abuckner@alicebuckner.com

BROOKLINE-NH 130 CORRIDOR STUDY

COMMENTS & SUGGESTIONS

Please use the space below to note any issues or concerns that were not addressed this evening:

Area at end of 130 & 13 across fr. State Liquor store gets a high volume of kids crossing 13 to get to Townsend Hill Rd & Ten Rod Road to get over to Cap. Samuel Douglass Academy. Rte 13 is more of a concern for me -- we should have lights + crosswalks at the RR sta and at the Liquor St. area. Speed limit must be reduced on 13 before we have a tragic accident.

Thank You

BROOKLINE-NH 130 CORRIDOR STUDY

COMMENTS & SUGGESTIONS

Please use the space below to note any issues or concerns that were not addressed this evening:

I live on a dirt road Heavily travelled by trucks (gravel) I would much rather encounter a TRUCK THAN A MINIVAN!

WHO PAYS FOR A MILLION DOLLAR PROJECT? NUTS! OTHER TOWNS (MILFORD, AMHERST) HAVE TRUCKS + SCHOOLS + WINDING ROADS.

BROOKLINE-NH 130 CORRIDOR STUDY

COMMENTS & SUGGESTIONS

Please use the space below to note any issues or concerns that were not addressed this evening:

South Main ST, Stickney Brook RD, Both have several Residences with several young children. This has To be taken into consideration with the influx in bicycle traffic on S. Main ST.

In Conclusion "don't expect any help from the State as all they want is to keep traffic moving — it will take a high body count to convince them otherw

BROOKLINE-NH 130 CORRIDOR STUDY

COMMENTS & SUGGESTIONS Judy cook — 673-0543

Please use the space below to note any issues or concerns that were not addressed this evening:

① Need to look at the broader issues — locate the "East/West Corridor Study that was done in the mid '90's — ressurect it and get Hollis on board.

② Consider w/ option 3 using the old rail bed that runs behind the Texaco Station as the cut thru rather than the Ranere property (as proposed)

③ A Study is needed to look at getting traffic off of old Milford Rd. — all the subdivisions off old Milford road have to come thru the center of town to go ⑤ — past 2 90° turns and a bad hill in the winter.

OVER ↓

④ locate the island infront of the town hall perhaps install a rotary in its place.

⑤ At the very least get some signage at cross Rd @ 130 asking people to signal if Turning or put a left-turn lane (coming from Nashua)

⑥ I prefer the Meeting house hill plan for sidewalks since because of Camp Tevya there are a large pedestrian population in the summer coming + going to the center of town (not campers) (camp employees — going to + from the Village Store.

⑦ On the proposed speed zone map — think about the number of speed zones you have mapped in the area of Main St + Milford St. too many changes —

(3) Please look into a second access to Old Milford Road from 130/13

BROOKLINE-NH 130 CORRIDOR STUDY

COMMENTS & SUGGESTIONS

Please use the space below to note any issues or concerns that were not addressed this evening:

(1) My biggest concern is that this whole project seems to be the result of one family who recently moved to town and now wants everyone using 130 to use other roads just because they're unhappy that a state road has a lot of traffic. Brookline is growing and people should expect

Even considering re-routing 130 to local roads is frustrating to residents of the local roads - why should they have to deal w/ traffic that should be on 130?

Brookline – NH 130 Corridor Study
Info Meeting
08-24-05

Name	Address	Phone	Email
Joe Raveri	14 MAIN St	672 8098	—
ALAN ROSENBERG	68 CLEVELAND HILL RD		
Chris St George	13 Lorden Lane		
F Vincent Gerbino	Hollis-Brookline Journal	673-3100	
FRANK LUKOVITS	36 LAURELCREST DR.	673-6505	
Judy Cook	10 Main St	673-0543	brooklinea@aol.com
Dr David W Smith	14 Milford ST	673-3073	
Tom Quarles	32 Main St. **Send Report**	673-7515	ksimms@charter.net
TOM SHUTT	18 MAIN St	673-4851	
Dave Fessenden	4 Oak Hill Rd.	672-3049	
JOHN KRAMARCZYK	6 MASON ROAD	673 8199	JOHNKRAMARCZYK@CHARTER.NET
Jason Kramarczyk	6 Mason Rd	320 2218	JFK@RWsullivan.com
ERNIE HUDZIEC	8 MILFORD ST	6734030	
Anthony Tochko	30 MAIN	673 1417	

Brookline – NH 130 Corridor Study
Info Meeting
08-24-05

Name	Address	Phone	Email
Emily Cavalier	Telegraph	5945833	cavaliere@telegraph-nh.com
Ben [illegible]	211 Rt 13	345-2025	SENTER 05033@charter.net
Sherry Neilsen-Steinhardt	P.O. Box 355	6731784	therryns@charter.net
Mary B. Fessenden	66 Rte 13	673-4867	
[illegible]	30 South Main St	672-30[illegible]	mtbike96@charter.net
Sally Burd	4 Maxwell Dr	6734933	

Brookline – NH 130 Corridor Study
Info Meeting
08-24-05

Name	Address	Phone	Email
SUSAN FESSENDEN	20 SOUTH MAIN ST Brookline	673 7265	
George DIXON	50 SOUTH MAIN ST Brookline	673 4298	
ANN SOMERS	11 POTANIPO HILL RD Bklne	672-9054	
Charles Corey Sr	7 Main St Brookline	673 4058	
Helen + Art Fenske	15 Milford St. "	672-1335	Helfenske@aol.com
Keith + Irene Thompson	31 South Main St	673 4443	Kthump9909@aol.com
George Foley	4 MAXWELL DRIVE	673-GWF3	
Chad Farrow	5 Kodiak Rd.	672-1665	xanman2112@charter.net
MARK LUTTON	24 SOUTH MAIN ST	672-4002	
James McElroy	8 Steam Mill Hill Road	673 6311	brookline@themcelroys.com
Roisin McElroy	"	"	"
Jim Murphy	46 MOUNTAIN ROAD	673 0613	
Michael Turner	3 Bond st	673 5720	
William Quigley	30 South Main ST	672 3029	

Brookline – NH 130 Corridor Study
Info Meeting
08-24-05

Name	Address	Phone	Email
Wesley H. Whitelier	3 Post Office Drive	672-6216	wes@brookline.nh.us
S. Shutt	18 Main St	6734881	TwoShutts @ yahoo.com
Amy Fessendon	4 Oak Hill Rd.	672-3049	
Buddy Dougherty	11 Ruonala rd	672-9990	
Sheryl Corey	7 Main St	673-4058	
Meg anne	109 N. Mason	6733955	MASKEEZX@aol
John Varzonik	114 N. Mason	249-9276	
Dorothy Haight	19 Milford St.	673-4059	
Russell Haight	17 S. Main St.	673-8574	
Lori Dixon	50 South Main St	673-4298	
Alice Buckner	5 Averill Road	672-5951	abuckner@alicebuckner.com
Robert Buckner	5 Averill Rd	"	hbbuckner@yahoo.com
mark + Bonnie Fessenden	35 So. Main St	673-3768	bfessy@AOL.COM