

MEMORANDUM

DATE: January 6, 2016

TO: Ms. Karen Galligan
Town of Southborough DPW
147 Cordaville Road
Southborough, MA

FROM: Robert J. Michaud, P.E. – Managing Principal
Daniel A. Dumais, P.E. – Senior Project Manager

RE: **Preliminary Truck Exclusion Evaluation – Parkerville Road**
Southborough, Massachusetts



MDM Transportation Consultants, Inc. (MDM) has conducted a preliminary evaluation of existing/baseline data to support a Heavy Commercial Vehicle Exclusion (HCVE) for the Parkerville Road corridor north of Route 9 in Southborough, Massachusetts. Massachusetts General Laws (MGL) Chapter 85 Section 2 establishes the authority of the MassDOT to approve certain traffic regulations and standards for roadways in the Commonwealth including but not limited to HCVE's¹. This initial evaluation concludes that baseline traffic data collected in November 2016 fall below applicable warrants and criteria for establishing a HCVE under Section 10A-9 of the Massachusetts Amendments to the 2009 Manual on Uniform Traffic Control Devices (MUTCD) and the Standard Municipal Traffic Code.

Key aspects of the initial HCVE evaluation include the following data and exhibits which are expanded upon throughout this study:

- *Traffic Counts:* 24-hour consecutive weekday count of all vehicles using Parkerville Road (2 locations), broken down by 15-minute interval and by vehicle classification.
- *Area Map:* An orthophoto/MassGIS area map, **Figure 1**, delineates the excluded street, Parkerville Road between Route 9 and Route 30, in red and the alternate route in green, Cordaville Road (Route 85).

¹ The official standards of MassDOT are documented in the Massachusetts Amendments to the 2009 Manual on Uniform Traffic Control Devices and the Standard Municipal Traffic Code and addenda.

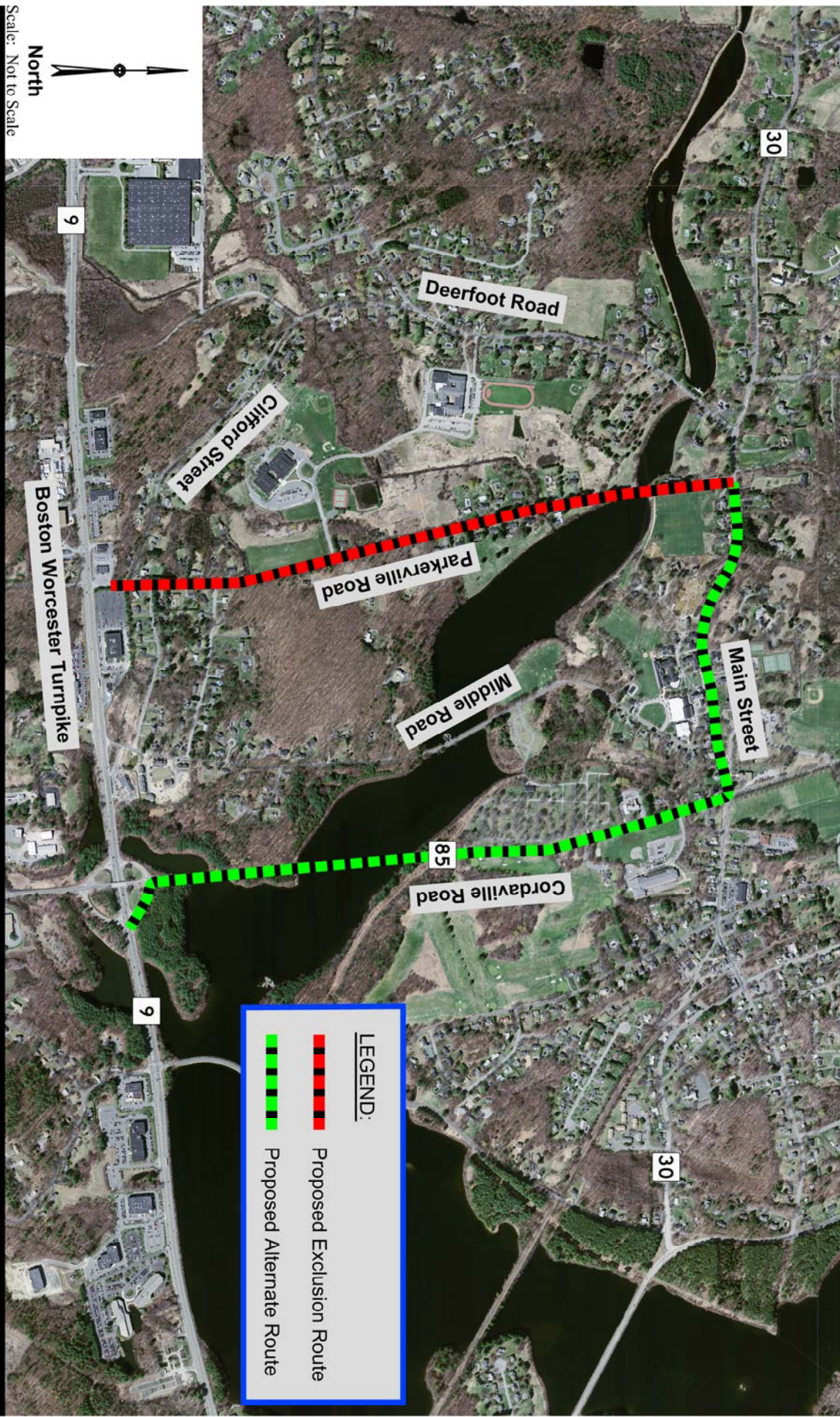


Figure 1

Parkerville Road Proposed Heavy Commercial Vehicle Exclusion

- *Traffic Volume Histogram*: Histogram exhibits (**Figure 2** and **Figure 3**) that plots recorded vehicle activity for two (2) locations along Parkerville Road for a 24-hour consecutive period in 30-minute increments by vehicle classification. Note that commercial vehicles with a carrying capacity of over 2-1/2 tons are specifically identified and separate from school buses for the corridor².

MDM has reviewed the alternate route to using Parkerville Road between Route 30 and Route 9 via Route 85 (Cordaville Road) and deem this alternate route as appropriately designed for heavy commercial vehicles. A HCVE along Parkerville Road would represent a modest traffic shift that will not present a material impact to traffic activity on the affected public roadways. The alternative truck route connects Route 30 and Route 9 via Route 85 to the east of Parkerville Road. However, a review of the traffic data and HCVE warrant criteria indicates that Parkerville Road between Route 9 and Route 30 does not satisfy requirements for considering a truck exclusion. This finding is based on the limited number of heavy commercial vehicles currently using the roadway which account for only 2 to 3 percent of daily traffic, lack of recorded truck activity during evening hours.

Existing Traffic Characteristics

An overview of existing roadway conditions, traffic volumes along Parkerville Road is provided below.

Parkerville Road

Parkerville Road is classified by the Massachusetts Department of Transportation (MassDOT) as an urban collector roadway under local (Town) jurisdiction in Southborough, Massachusetts. The section of Parkerville Road within the study area includes one travel lane in each direction and is a 1.1-mile stretch of road connecting Main Street (Route 30) to the north and Boston Worcester Turnpike (Route 9) to the south. The roadway is approximately 22 feet wide along its entire length and the pavement is generally in good condition. There are no marked centerline or edge lines. The regulatory speed limit along Parkerville Road is 30 mph with a 20-mph school zone located near the driveway for the Neary Elementary School and Trottier Middle School. To promote slower travel three speed tables have been installed along Parkerville Road. A sidewalk exists on the eastern side of the roadway between Clifford Street and the school property, on both sides of the roadway near the school athletic fields, along the eastern side of the roadway between the school driveway and the Sudbury Reservoir Trail, and along the eastern side of the roadway near Route 30. Land uses along Parkerville Road include two schools, residential homes, athletic fields and the Sudbury Reservoir, and two commercial/office buildings at the corner of Route 9.

² School buses are specifically excluded from consideration of a HCVE under Section 10A-9 of the Massachusetts Amendments to the 2009 Manual on Uniform Traffic Control Devices (MUTCD) and the Standard Municipal Traffic Code.

Daily Traffic Volumes

Daily traffic volume data was collected using video traffic recorder devices along Parkerville Road on a typical weekday (24 hours) on Thursday, November 16, 2016. The counts were broken down by 15-minute interval and by vehicle classification. The counts were performed at two (2) locations along Parkerville Road; to the north near Main Street (Route 30) and to the south between General Knox Road and the Neary Elementary School and Trottier Middle School driveway and the results can be found summarized in **Table 1**.

**TABLE 1
EXISTING TRAFFIC VOLUME SUMMARY – PARKERVILLE ROAD**

Time Period	Daily	Percent	Peak Hour	Peak Flow	Peak Hour
	Volume (vpd) ¹	Daily Traffic ²	Volume (vph) ³	Direction ⁴	Directional Volume (vph)
<i>South of Route 30</i>					
Weekday Morning Peak Hour	1,255	16%	200	51% NB	101
Weekday Evening Peak Hour	1,255	14%	179	85% NB	153
<i>Between General Knox Road and School Driveway</i>					
Weekday Morning Peak Hour	1,331	19%	253	65% NB	165
Weekday Evening Peak Hour	1,331	12%	154	89% NB	137

¹Two-way daily traffic expressed in vehicles per day without seasonal adjustment.

²The percent of daily traffic that occurs during the peak hour.

³Two-way peak-hour volume expressed in vehicles per hour.

⁴NB = Northbound, SB = Southbound

As summarized in **Table 1**:

- *South of Route 30.* The weekday daily traffic volume on this section of Parkerville Road is approximately 1,255 vehicles per day (vpd) on a weekday with peak hour traffic flow ranging from 179 to 200 vehicles per hour (vph) representing 14 to 16 percent of daily traffic flow. Vehicle flow is fairly even during the weekday morning peak hour and heavily skewed in the northbound direction during the weekday evening peak hour. The travel patterns are likely skewed like this due to the right-in/right out nature of the Parkerville Road/ Route 9 intersection to the south and the location of the Neary Elementary School and Trottier Middle School driveway along Parkerville Road.

- *Between General Knox Road and School Driveway.* The weekday daily traffic volume on this section of Parkerville Road is approximately 1,331 vehicles per day (vpd) on a weekday with peak hour traffic flow ranging from 154 to 253 vehicles per hour (vph) representing 12 to 19 percent of daily traffic flow. Vehicle flow is skewed heavily to the north during both the weekday morning and weekday evening peak hours. Again, the travel patterns are likely skewed like this due to the right-in/right out nature of the Parkerville Road/ Route 9 intersection to the south and the location of the Neary Elementary School and Trottier Middle School driveway along Parkerville Road.

Traffic Volume Histograms

The daily traffic count data outlined above has been used to create hourly histograms which have been broken down by vehicle classification. Specifically, the graphs include a breakdown of standard passenger vehicles, school buses and heavy vehicles (commercial vehicles with a carrying capacity of over 2-1/2 tons) and are provided in **Figure 2** and **Figure 3** for the two locations along Parkerville Road.

As shown in **Figure 2** and **Figure 3**:

- *Heavy Vehicles.* Daily heavy commercial vehicle use along Parkerville Road ranges from 23 to 36 trucks. The heavy vehicles include only medium trucks with no articulated tractor trailer trucks identified in the count. Heavy vehicle activity was generally observed to occur between 6:00 am and 6:00 pm. Heavy vehicle activity represents less than 3% of the total trip activity along Deerfoot Road and/or indicate modest activity levels that generally range from 1 to 3 trucks per hour during daytime periods.
- *School Buses.* School bus activity was observed along Parkerville Road between 7:00 am and 8:00 for school drop-off and between 2:00 pm and 4:00 pm for school pick-up activity. In total, 39 bus trips and 30 bus trips were observed along Parkerville Road to the south and to the north of the school access driveway, respectively. Bus traffic represented between 2 and 3% of the total trips activity along Parkerville Road.

Observed Travel Speeds

Vehicle speeds were obtained for the northbound and southbound travel directions on Parkerville Road just north of the Neary Elementary School and Trottier Middle School driveway in November 2016 using an ATR machine equipped with speed radar. **Table 2** summarizes the average and 85th percentile speeds for the location. Detailed speed data is provided in the **Attachments**.

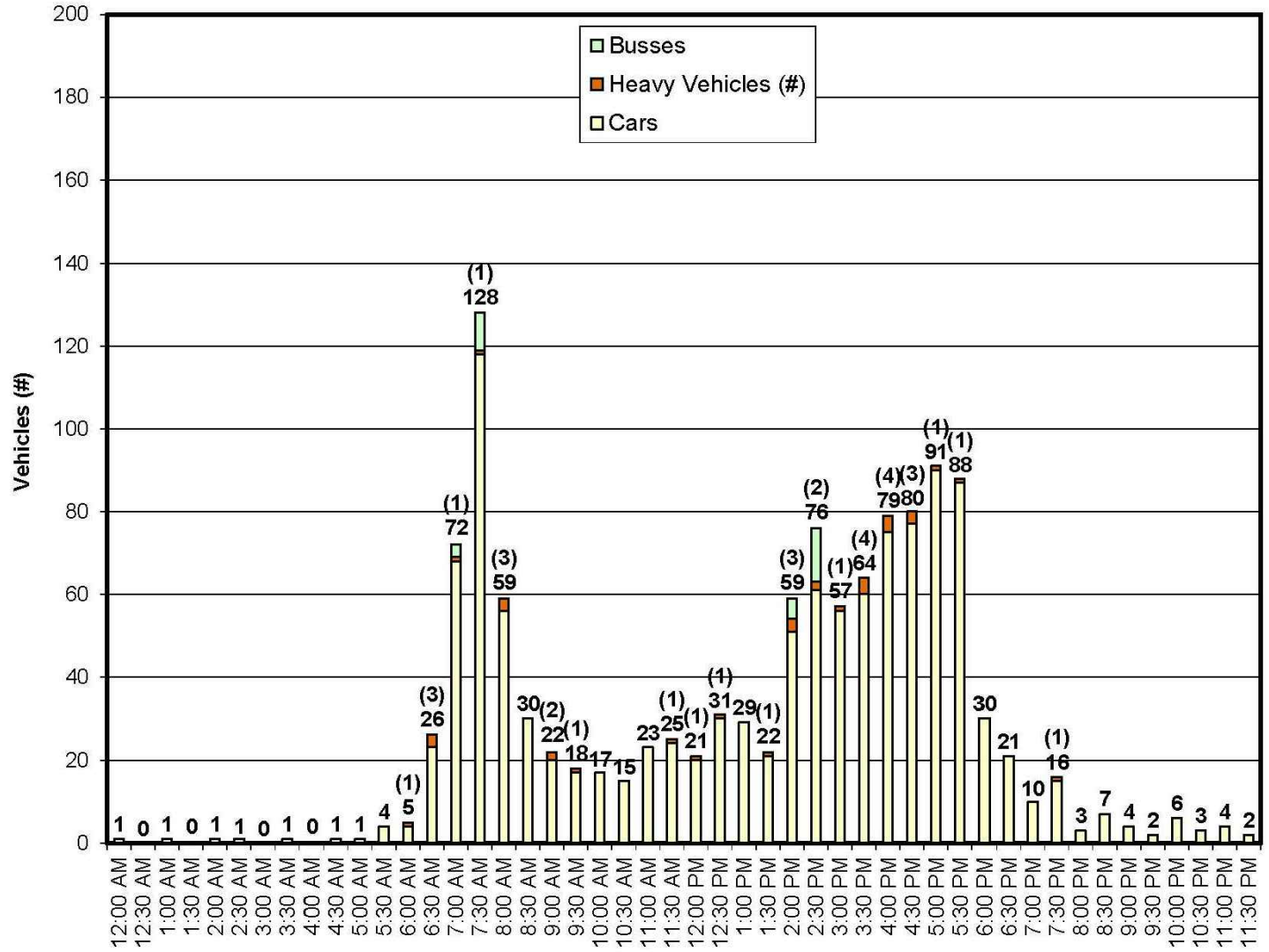


Figure 2

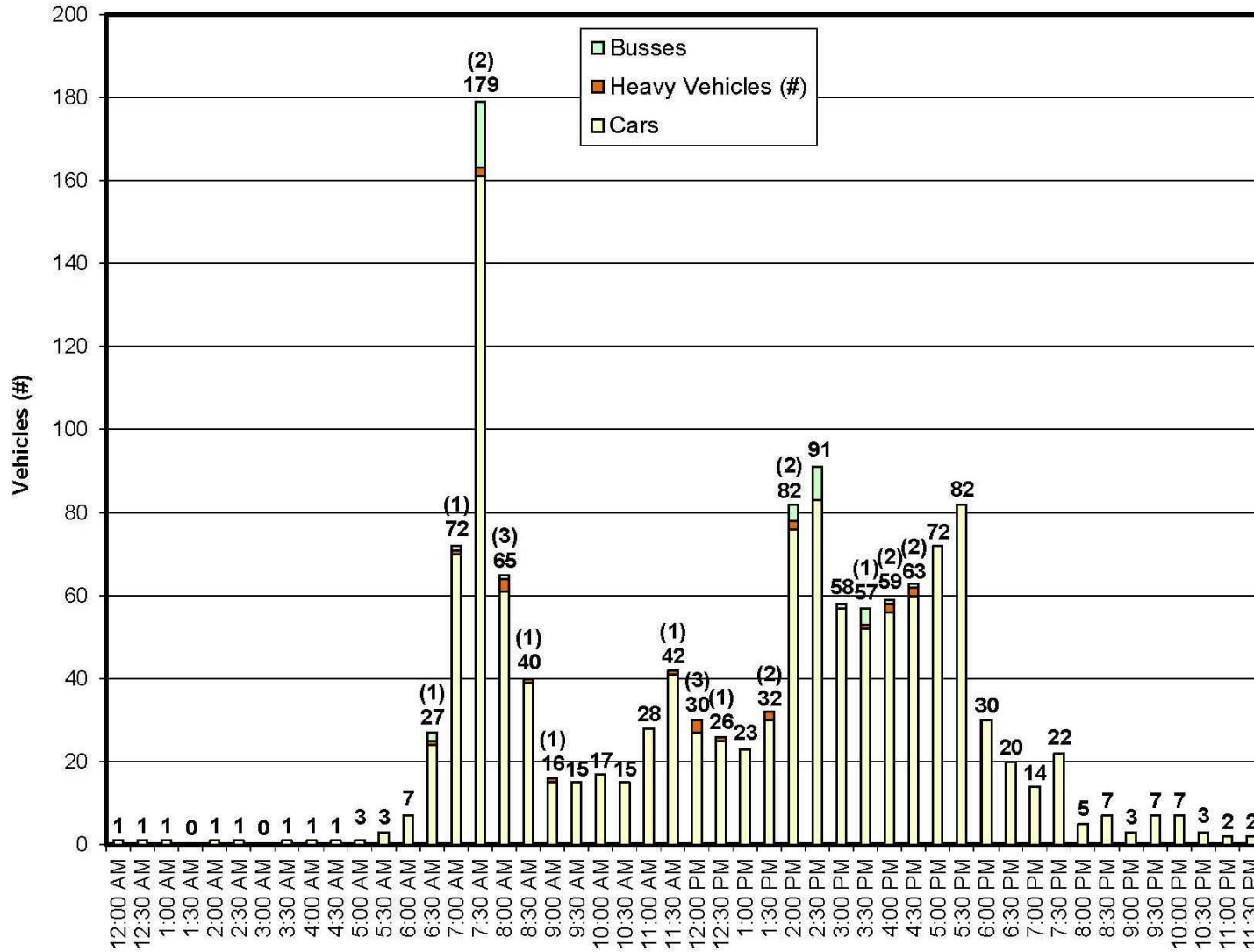


Figure 3

TABLE 2
SPEED STUDY RESULTS – PARKERVILLE ROAD

Travel Direction	Posted Speed Limit	Travel Speed	
		Average ¹	85 th Percentile ²
Northbound	30	33	37
Southbound	30	31	35

¹ Arithmetic Mean.

² The speed at or below which 85 percent of the vehicles are traveling.

As summarized in **Table 2**, the mean (average) travel speed on Parkerville Road in the study area is 33 mph traveling northbound and 31 mph traveling southbound. The 85th percentile travel speed was observed to be 37 mph and 35 mph in the northern and southern travel directions, respectively. The observed travel speeds are higher than the posted (regulatory) speed limit of 30 mph on Parkerville Road.

Alternative Commercial Vehicle Route (Via Route 85)

The alternative travel route was reviewed to ensure that, if selected, it can reasonably accommodate the burden of additional truck traffic. MDM has conducted a field review of the alternative truck route to verify existing pavement conditions, traffic controls, pavement markings, pavement widths, signs, posted/regulatory travel speeds, and land uses. As outlined by the Massachusetts Amendments to the 2009 MUTCD:

“A truck exclusion from a municipality way may be authorized provided a suitable alternative route is available. The alternative route shall have an effective width and pavement structure which can safely accommodate the additional truck traffic. In addition the alternative route must meet one of the following conditions:

- (1) Lie wholly within the community making application,
- (2) Lie partially in an adjacent community but only on State Highway, or
- (3) Lie partially in an adjacent community but have the adjacent community’s written approval.

Numbered routes are ineligible for heavy commercial vehicle exclusions, per the Board of Commissioners, November 22, 1995.”

Cordaville Road (Route 85)

Cordaville Road between Route 9 and Route 30 is classified by the Massachusetts Department of Transportation (MassDOT) as an urban minor arterial roadway under both local (Town) and MassDOT jurisdiction and is located fully within the Town of Southborough, Massachusetts. The section of Cordaville Road within the study area includes one travel lane in each direction

and is a 1.0-mile stretch of road connecting Main Street (Route 30) to the north and Boston Worcester Turnpike (Route 9) to the south. Signs are posted on both the northbound and southbound approach to Route 30 indicating an existing truck exclusion along Route 30. The roadway is approximately 30 feet wide along its entire length and the pavement is generally in good condition. Pavement markings include a double yellow centerline and white edge lines. The regulatory speed limit along Cordaville Road varies between is 25 mph and 40 mph with a 20-mph school zone located near the Woodward School. Land uses along Cordaville Road include several residential homes near Route 30, athletic fields, the Woodward School, a Senior Center/Town Offices, the Sudbury Reservoir, and the Southborough Rural Cemetery.

Upon review, Cordaville Road is a suitable alternative route that lies wholly within the Town of Southborough and has an effective width and pavement structure which can safely accommodate the additional truck traffic.

HCVE Warrants

As outlined by the Massachusetts Amendments to the 2009 MUTCD:

“...one or more of the following may be sufficient justification for truck exclusion:

1. Warrants
 - A. A volume of heavy commercial vehicles, which usually is in the range of five (5) to eight (8) percent, reduces the utilization of the facility and is cause for a substantial reduction in capacity or safety.
 - B. The condition of the pavement structure of the route to be excluded indicates that further repeated heavy wheel loads will result in severe deterioration of the roadway. (subject to Department review).
 - C. Notwithstanding the foregoing, in certain instances where land use is primarily residential in nature and a municipality has requested exclusion only during hours of darkness, a specific night exclusion may be granted.”

A review of the typical HCVE warrants indicates that Parkerville Road between Route 9 and Route 30 is does not satisfy any of the three warrants for a truck exclusion based on the following:

- *Limited HCVE Vehicles.* Up to 36 heavy vehicles use Parkerville Road on a daily basis which represents less than 3 percent of the total trip activity along Parkerville Road. The heavy vehicles include only medium trucks with no articulated tractor trailer trucks identified in the count. The limited number and type of vehicles do not significantly

reduce the utilization of the facility or cause for a substantial reduction in capacity or safety.

- *Adequate Pavement Structure.* A field review of the pavement condition along Parkerville Road indicated that the roadway is in good condition with no significant rutting due to heavy vehicle use. The roadway provides access to two schools and thus school buses which are exempt from any HCVE exclusions are prevalent during school drop-off/pick-up periods. The observed heavy vehicles were typically medium trucks and included tow trucks, utility company trucks, and small box trucks which are all smaller than a typical school bus; therefore, the no severe deterioration is expected.

- *Nighttime Exclusion Not Warranted.* The heavy vehicle activity was generally observed to occur between 6:00 am and 6:00 pm and there are only a few residential homes located along the roadway, therefore, an overnight exclusion would not currently be warranted or beneficial.

Conclusions

Review of traffic data and comparison to HCVE warrants indicates that Parkerville Road between Route 9 and Route 30 does not satisfy warrants outlined by MassDOT for truck exclusion. This finding is based on the limited number and types of heavy commercial vehicles currently using the roadway which comprise medium box trucks, service vehicles and utility trucks, adequate pavement structure and geometry and lack of overnight truck use.