

PRINCIPALS

Joseph J. DeSantis, P.E., PTOE

John S. DePalma

Casey A. Moore, P.E.

Gary R. McNaughton, P.E., PTOE

Christopher J. Williams, P.E.

ASSOCIATES

John J. Mitchell, P.E.

R. Trent Ebersole, P.E.

Matthew M. Kozsuch, P.E.

Maureen Chlebek, P.E., PTOE

Dean A. Carr, P.E.

Jason T. Adams, P.E., PTOE

Christopher K. Bauer, P.E., PTOE

Mark A. Roth, P.E.

John R. Wichner, P.E., PTOE

FOUNDER

Joseph W. McMahon, P.E.

July 10, 2020

Richard Harris, AICP  
Director of Planning & Conservation  
Town of South Hadley  
South Hadley, MA

RE: **Proposed Residential Development  
Hadley Street (Route 47), South Hadley, MA  
Response to Peer Review Comments**

Dear Mr. Harris,

McMahon Associates has prepared responses to the comments raised at the public hearing held on June 22, 2020 regarding the Traffic Impact Study (TIS) prepared for the proposed residential development located on Hadley Street (Route 47) in South Hadley, MA.

A summary of the comments from the hearing and McMahon's responses are provided below.

***Comment: The operations of the existing gravel driveway are unclear based on information provided in the TIS. The TIS indicates that the gravel driveway would be utilized during the construction of the proposed residential development. It was requested that the operations of the gravel driveway located off Hadley Street (Route 47) be made clear.***

Response: Under the future build conditions, roadway access to the site would be provided via Frosty Lane. The existing gravel driveway is located south of Frosty Lane, and is expected to remain operational. Gravel removal vehicles and other truck access associated with the construction of Frosty Lane is proposed to operate independently of the existing gravel operations.

***Comment: With Frosty Lane being utilized during the construction of the project, the available sight distance from the driveway for a construction semi-trailer should be discussed.***

Response: AASHTO provides variations on determining the appropriate sight distance for both passenger vehicles and heavy vehicles. Heavy vehicles require a longer breaking distance than passenger vehicles due to their size and weight. The AASHTO publication "A Policy on Geometric Design of Highways and Streets, 7<sup>th</sup> Edition" indicates that for stopping sight distance (SSD), "there is one factor that tends to balance the additional breaking lengths for heavy vehicles with those for passenger cars. The truck driver is able to see substantially farther beyond vertical sight obstructions because of the higher position of the seat in the vehicle"<sup>1</sup>. Therefore, AASHTO does not require separate minimum SSD measurements for passenger vehicles and heavy vehicles.

<sup>1</sup> – A Policy on Geometric Design of Highways and Streets (American Association of State Highway and Transportation Officials, 2018), Section 3.2.2.5, Page 3-6

However, when determining the recommended intersection sight distance (ISD), AASHTO provides guidance on differentiating between passenger vehicles and heavy vehicles. This difference is determined based on the accepted gap in main line traffic, or time gap, for both vehicle types. Heavy vehicles tend to choose a longer time gap to maneuver turns than passenger vehicles, and therefore, the recommended ISD for heavy vehicles is typically larger.

The available sight distance at Frosty Lane for both passenger vehicles and tractor trailers based on the appropriate AASHTO time gap variables is shown below in Table 1. The AASHTO required SSD and recommended ISD is provided for both the posted speed of 40 mph and measured speed of 47 mph on Hadley Street (Route 47).

**Table 1: Sight Distance – Hadley Street (Route 47) at Frosty Lane**

Vehicle Type	Direction	Available SSD Measured (ft)	Available ISD Measured (ft)	SSD Required (ft)		ISD Recommended (ft)	
				40 mph <sup>(1)</sup>	47 mph <sup>(2)</sup>	40 mph <sup>(3)</sup>	47 mph <sup>(4)</sup>
<b>Passenger Vehicle</b>	Looking Left (North)	>500	525	305	385	440	520
	Looking Right (South)	>500	>500	305	385	380	450
<b>Heavy Vehicle</b>	Looking Left (North)	>500	525	305	385	560	660
	Looking Right (South)	>500	>500	305	385	500	590

(1) AASHTO stopping sight distance (see AASHTO Table 3-1) for posted speed of 40 mph

(2) AASHTO stopping sight distance (see AASHTO Table 3-1) for operating speeds of 47 mph

(3) AASHTO intersection sight distance calculated for posted speed of 40 mph based on vehicle type. (see AASHTO Table 9-6 for Case B1 for Left Turn from Stop and Table 9-8 for Case B2, Right Turn from Stop).

(4) AASHTO intersection sight distance calculated for operating speeds of 47 mph based on vehicle type. (see AASHTO Table 9-6 for Case B1 for Left Turn from Stop and Table 9-8 for Case B2, Right Turn from Stop).

As shown in Table 1, the required SSD is met for both vehicle types approaching the proposed Frosty Lane. The recommended ISD is met for passenger vehicles exiting Frosty Lane in both directions; however, it is not met for heavy vehicles turning onto Hadley Street (Route 47) based on the measured operating speed of 47 mph. The recommended ISD for the posted speed limit of 40 mph is met for heavy vehicles looking right from Frosty Lane, but is not met looking left.

The Manual on Uniform Traffic Control Devices (MUTCD) states that “Vehicular Traffic Warning signs should be used only at locations where the road user’s sight distance is restricted, or the condition, activity, or entering traffic would be unexpected.” As the available sight distance at Frosty Lane is adequate for both passenger and heavy vehicles, and indicates that a driver traveling along Hadley Street (Route 47) would have sufficient time to react appropriately to a truck exiting the driveway, the installation of temporary warning signs for potential heavy entering and exiting during construction is

not recommended. However, it is recommended that speed feedback signage be provided on Hadley Street (Route 47) in the southbound direction approaching Frosty Lane to encourage lower vehicle speeds, and therefore lowering the recommended ISD for left-turning heavy vehicles exiting the site.

***Comment: The capacity analysis presented in the TIA references standards from the 2010 Highway Capacity Manual (HCM). This publication has since been updated with the HCM 6<sup>th</sup> edition. The TIA should use references from the updated version and any differences between the two versions should be provided.***

Response: The reference to the 2010 HCM in the report text was a typo. The capacity analysis presented in the report was based on the most recent HCM 6<sup>th</sup> Edition<sup>2</sup>, which is the current accepted standard. The major difference between the 2010 and 6<sup>th</sup> edition of the HCM primarily impact on the delay at signalized intersection which would not impact the capacity analysis presented in the report, as the study area does not include signalized intersections.

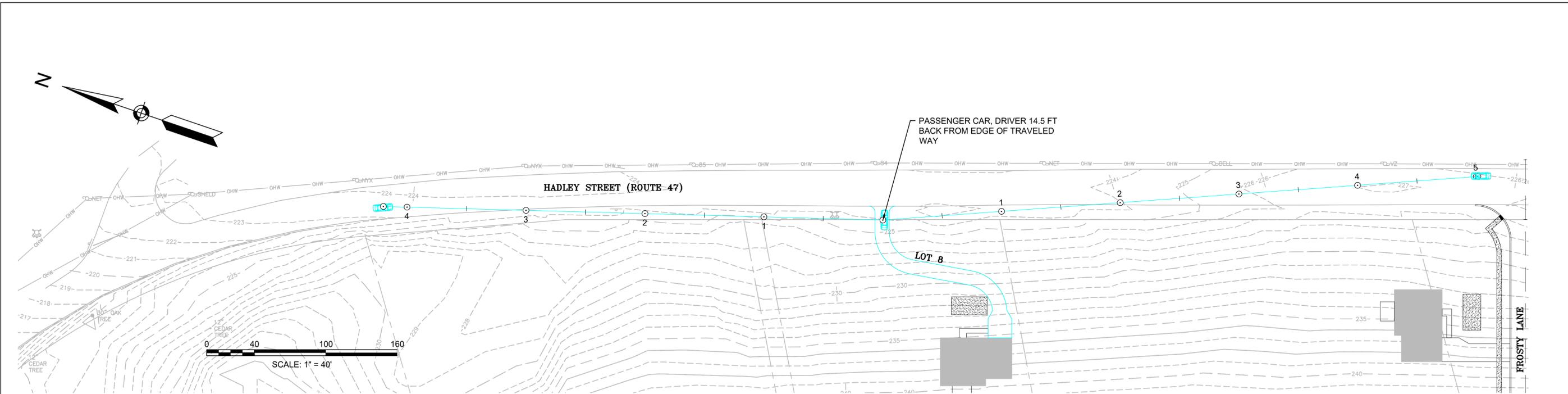
***Comment: The response to comments memo prepared by McMahon and dated June 12, 2020 included a sight line graphic for a vehicle exiting the Lot #8 driveway. This graphic depicted a vehicle located eight-feet back from the edge of the travel lane which is less than the AASHTO standard of 14.5 feet. Please provide a sight line graphic showing the available sight lines for a vehicle 14.5 feet back from the edge of the travel way.***

Response: Lot #8 provides access to a single residence driveway that is located in between the proposed northern site driveway and Frosty Lane. The available sight lines from this driveway for a vehicle located 14.5 feet from the edge of the travel way are depicted in the attached graphic. As shown in the attached graphic, the sight lines extend through existing vegetation along the edge of Hadley Street (Route 47) along the frontage of the project site. The removal of select vegetation is expected to allow for adequate sight distance at the Lot #8 driveway.

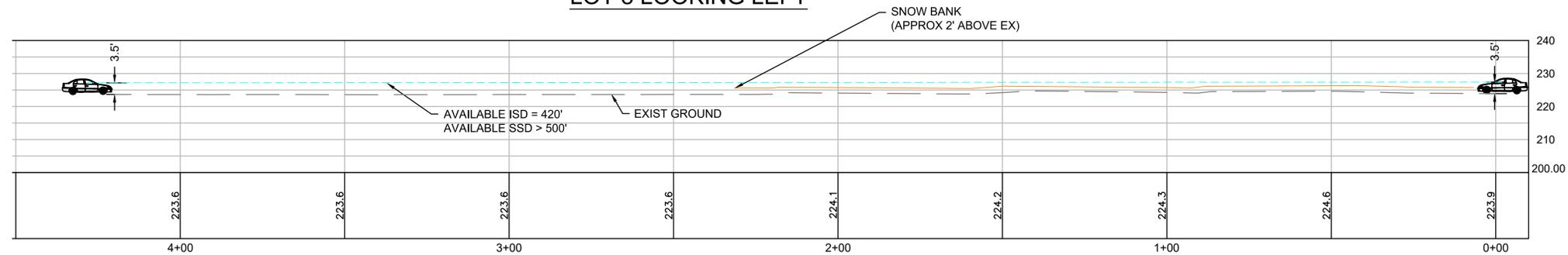
Sincerely,



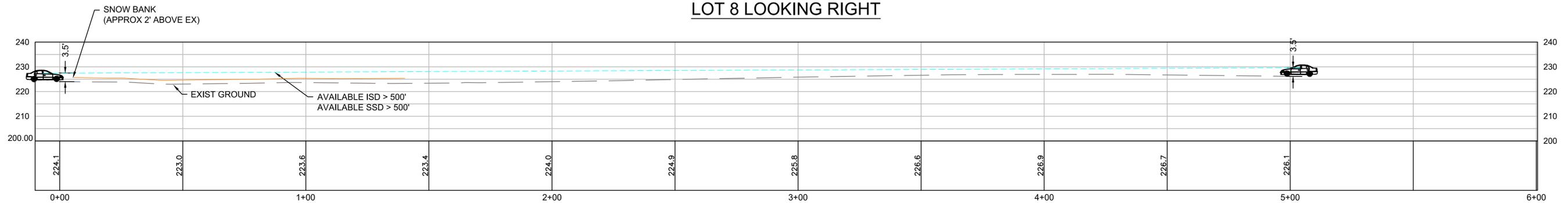
Paul Furgal, P.E., PTOE  
Senior Project Manager



**LOT 8 LOOKING LEFT**



**LOT 8 LOOKING RIGHT**



350 MYLES STANDISH BLVD  
SUITE 103  
TAUNTON, MA  
TELE: (508) 823 - 2245  
FAX: (508) 823 - 2246

120 WATER ST  
4TH FLOOR  
BOSTON, MA 02109  
TELE: (617) 556 - 0020  
FAX: (617) 556 - 0025

14 BREAKNECK HILL RD  
SUITE 201  
LINCOLN, RI 02865  
TELE: (401) 648 - 7200

94 NORTH ELM STREET  
SUITE 308  
WESTFIELD, MA  
TELE: (413) 875 - 8855

**INTERSECTION SIGHT DISTANCE PLAN  
PROPOSED RESIDENTIAL DEVELOPMENT  
HADLEY STREET (ROUTE 47)  
SOUTH HADLEY, MA**

SHEET #	TOTAL SHEETS