

May 27, 2022

5293

Bolton Zoning Board of Appeals

663 Main Street

Bolton, MA 01740

**RE: Sight Distance Calculations
Mallard Lane - Comprehensive Permit
Bolton, MA**

Dear Members of the Board:

On Behalf of the applicant, Mr. James Morin, Dillis & Roy Civil Design Group, Inc. has prepared this letter to supplement the sight distance calculations that are depicted on the Site Plans for the project.

Dillis & Roy has evaluated the sight distances at the proposed project driveway location. The analysis was based on the 2018, 7th Edition, of "A Policy of Geometric Design of Highways and Streets" published by the American Association of State Highway and Transportation Officials (AASHTO).

Roadway Speed

South Bolton Road does not have a posted speed limit. The Town of Bolton sets a speed limit of 40 mph for all non-posted roadways. As such, the speed used in this analysis is 40 mph.

Stopping Sight Distance

As defined by AASHTO Section 3.2.2, the Stopping Sight Distance (SSD) is the sum of two distances: (1) the distance traversed by the vehicle from the instant the driver sights an object necessitating a stop to the instant the brakes are applied, and (2) the distance needed to stop the vehicle from the instant the brake application begins.

DR measured the available SSD in the field using the AASHTO standards using a driver's eye height of 3.5-feet (vehicle in Mallard Lane) and an object height (vehicle lights) at 2-feet for the north- and southbound directions on South Bolton Road.

Table 1: Stopping Sight Distance

Approach Direction	Available SSD	AASHTO Recommended (speed limit)
Northbound	220-feet	305-feet ¹
Northbound (exc. Abutter)²	125-feet	305-feet ¹
Southbound	302-feet	315-feet ¹

¹Recommended SSD is based on AASHTO, A Policy on Geometric Design of Highways and Streets (2018) Table 3-2 using a 3% downgrade.

²Stopping sight distance calculated assuming no view over the abutting property to the south of the site.

As shown, while the southbound approach to the proposed intersection is close to the AASHTO recommended distance, the northbound approach is less than recommended.

Intersection Sight Distance

Clear sight triangle provides sight distance sufficient for a stopped driver on a minor-road approach to depart from the intersection and enter or cross the major road. AASHTO defines several cases which are a function of the type of roads in question and the controls (or lack of controls) at the intersection. In this case, the proposed intersection aligns with Case B – Intersection with stop control on the minor road.

Per section 9.5.3.2.1 (AASHTO), the Intersection Sight Distance (ISD) is measured from the “decision point” which is measured 14.5-feet from the edge of the major road traveled way at the driver's eye height (3.5-feet) to the approaching object on the major street.

Table 2: Intersection Sight Distance

Approach Direction	Available ISD	AASHTO Recommended (speed limit)
Looking south (Left)	213-feet	445-feet ¹
Looking south (exc. Abutter)² (Left)	124-feet	445-feet ¹
Looking North (Right)	298-feet	385-feet ³

¹Recommended ISD is based on AASHTO, A Policy on Geometric Design of Highways and Streets (2018) Table 9-7.

²ISD calculated assuming no view over the abutting property to the south of the site.

³Recommended ISD is based on AASHTO, A Policy on Geometric Design of Highways and Streets (2018) Table 9-9.

As shown, at the regulatory speed limit of 40 mph, neither direction exceeds the AASHTO recommended Intersection Sight Distances.

Proposed Mitigation

Because the SSD and ISD estimated measurements are less than recommended by AASHTO, and due to the fact that South Bolton Road is a rather narrow, winding road, The applicant proposes the following measures to mitigate the sight distance issue:

1. The applicant will work with the Town's Police Department and the Select Board to review a reduction to the regulatory seeped limit for South Bolton Road.
2. The applicant will work with the Town's Police Department and the Select Board to obtain permission to construct an "Intersection Warning Sign" on both approaches along South Bolton Road in a location acceptable to the Police and the Department of Public Works. The sign would conform to the Manual on Uniform Traffic Control Devices (MUTCD) W2-2, or other sign deemed appropriate by the Town.

We trust this meets your needs at this time. If you have any questions or require any additional information, please do not hesitate to contact me.

Regards,

DILLIS & ROY
CIVIL DESIGN GROUP, INC.



Gregory S. Roy, P.E.
Vice President