

Mr. Patrick Reffett
Director of Planning & Inspections
Town of Hamilton
577 Bay Road
Hamilton, MA 01936

November 25, 2019

Ref.: T0947

Re: Peer Review – Traffic Evaluation
59-63 Willow Street

Dear Mr. Reffett:

On behalf of the Town of Hamilton, TEC, Inc. (TEC) has reviewed documents as part of the traffic engineering peer review for a Site Plan application related to a proposed mixed-use development at 59-62 Willow Street in Hamilton, Massachusetts. The project consists of constructing 2,400 square feet (SF) of commercial space and 18 apartment units in one building. The site is currently occupied with a single-family dwelling. The proposed project will include one full-movement driveway onto Willow Street.

The following documents were received as part of our review:

- Site Plan Review Application for 59-63 Willow Street, compiled by Mann & Mann, PC, dated September 16, 2019
- Permit Site Development Plans for 59-63 Willow Street, prepared by Meridian Associates, revision dated October 28, 2019

TEC completed a review of these documents for the Town of Hamilton, performed a field visit to observe the existing conditions on the roadways adjacent to the site, and prepared an evaluation of the sight distances, trip generation and parking demand for the site. The following provides a summary of the comments we compiled during our analysis.

SIGHT DISTANCE

A comprehensive field inventory of existing traffic conditions at the study area intersections was conducted by TEC staff in November 2019 to obtain information related to intersection geometry and lane usage. TEC measured the available sight distances at the proposed site driveway location along Willow Street. Access and egress for the site will be provided via a modification of the existing access currently serving #59 Willow Street to provide a 20-foot wide access driveway. The available sight lines were compared to minimum requirements established by the American Association of State Highway and Transportation Officials (AASHTO).

Sight distance represents the length of roadway that is visible to a driver traveling within the roadway. Two types of sight distance are typically evaluated for driveways and intersections: stopping sight distance (SSD) and intersection sight distance (ISD). SSD is the minimum distance required for a driver traveling along a roadway to perceive an object in the roadway and stop safely in advance of the object when traveling on a wet pavement surface. SSD is measured

from an eye height of 3.5-feet to an object height of 2-feet above the ground, which is equivalent to a driver viewing the taillight of a vehicle ahead. SSD is measured along the centerline of the travel lane approaching the driveway or intersection.

ISD represents the length of the roadway visible to a driver waiting to exit a driveway or minor street. Minimum ISD requirements are based on the distance required for a driver to exit a minor street onto a major street without requiring an approaching vehicle to reduce its speed from the design speed to less than 70 percent of the design speed. ISD is measured from an eye height of 3.5-feet to an object height of 3.5-feet and is measured from a distance 14.5-feet beyond the edge of the travel-way of the major roadway to represent a driver waiting to exit a driveway or minor roadway.

SSD is typically considered the critical sight distance, as it represents the minimum distance required for safe stopping, while ISD represents an acceptable speed reduction for approaching vehicles. The ISD, however, must be at least equal to the minimum required SSD in order to prevent a driver from entering the roadway when an approaching vehicle is too close to safely stop. The guidance provided by AASHTO states:

“If the available sight distance for an entering or crossing vehicle is at least equal to the appropriate stopping sight distance for the major road, then drivers have sufficient sight distance to anticipate and avoid collisions. However, in some cases, this may require a major-road vehicle to stop or slow to accommodate the maneuver by a minor-road vehicle. To enhance traffic operations, intersection sight distances that exceed stopping sight distances are desirable along the major road.”

There is no posted speed limit in the vicinity of the subject development. Although TEC did not perform a detailed speed data collection effort, it is reasonable to assume that an 85th percentile vehicle speed of at least 30 miles per hour, the prima facie speed for thickly settled / central business districts, under Massachusetts General Laws (M.G.L.) Chapter 90, Section 17. The 85th percentile speed indicates that 85% of the vehicles are traveling at this speed or slower. Table 1 below provides a summary of the available key sight distances at the proposed driveway location. For the purposes of this report, Willow Street will be designated an east-west roadway, and the driveway approach as north-south, entering Willow Street from the south.

Table 1 – Sight Distance Measurements

Approach / Direction	Speed	Minimum Required SSD	Minimum Recommended ISD	Measured	
				Stopping Sight Distance ^(b)	Intersection Sight Distance
Site Driveway Northbound at Willow Street: Looking (left) to the West Looking (right) to the East	30 mph ^(a)	200 FT	335 FT	225 FT 270 FT	14 FT ^(c) 190 FT ^(c)

^a Speed based on MGL c.90, § 17

^b Sight distance available along mainline Willow Street

^c Sight distance with the removal of existing bushes

The ISD sight lines for the proposed site driveway approach looking both east and west along Willow Street are currently completely obstructed by existing bushes. TEC understands that these bushes will be removed and be replaced by new landscaping. With the removal of the bushes, the current on-street parking limits the ISD to 14 feet looking left and 190 feet to the right. This indicates that vehicles exiting the site will be required to inch forward and enter the sidewalk area to ensure sufficient sight distance to complete a turn safely. This is not an unusual situation in downtown areas where on-street parking is present.

The stopping sight distances for both directions along Willow Street are above AASHTO minimum recommendations for safe operations.

The Applicant should confirm the proposed landscaping within the sight triangles is limited to ground cover lower than three feet in height or provides a canopy no lower than eight feet in height to ensure that the maximum sight lines are available and will remain clear. The Applicant should commit to maintain vegetation along the site frontage consistently to ensure that sight lines remain unobstructed at the site driveway intersection with Willow Street.

TRIP GENERATION

The proposed project will construct 2,400 SF of commercial area and 18 residential apartment units on the 0.93-acre parcel. The property will feature residential amenities, such as a fitness/wellness room, and a resident common area within the building. The additional amenities will be resident-centric and therefore will not add additional traffic to the facility.

TEC estimated the site generated traffic based on industry standard trip rates published in the Institute of Transportation Engineers' (ITE) publication, *Trip Generation, 10th Edition*. The 2,400 SF of commercial area could be occupied by several types of land uses by-right under the Town of Hamilton Zoning By-law, including office, retail or restaurant land uses. For the purposes of this analysis, TEC considered Land Use Code 712 – Small Office Building to be the most appropriate for the size and location of the proposed commercial area. For the apartment units, Land Use Code 220 – Multifamily Housing (Low-Rise) was used.

Table 2 - Trip Generation Summary

Time Period / Direction	LUC 220 Multifamily Housing	LUC 712 Small Office Building	Total New Trips
<i>Weekday Daily</i>	95	39	134
<i>Weekday Morning Peak Hour</i>			
Enter	2	4	6
Exit	7	1	8
Total	9	5	14
<i>Weekday Evening Peak Hour</i>			
Enter	8	2	10
Exit	5	4	9
Total	13	6	19

As shown in Table 1, the proposed mixed-use development is anticipated to generate a total of 134 new vehicle trips during the average weekday, with 14 new vehicle trips (6 entering and 8 exiting) during the weekday morning peak hour and 19 new vehicle trips (10 entering and 9 exiting) during the weekday evening peak hour.

PARKING

The Town of Hamilton’s Zoning By-law (§ 6.1.1) states that one off-street parking space is required for each dwelling unit and one off-street parking space is required for each three hundred (300) square feet or fraction thereof of Business Gross Floor Area, excluding basement storage area for “other service establishments and retail businesses.” For the proposed project, 18 parking spaces are required for the 18 dwelling units, and eight spaces are required for the 2,400 SF of commercial space, for a total of 26 parking spaces. The Applicant is proposing to provide 26 parking spaces, meeting the Zoning By-law requirement.

The ITE publication, *Parking Generation, 5th Edition* provides average rates for peak parking demand for various land uses. For Land Use Code 220 – Multifamily Housing (Low-Rise) and Land Use Code 712 – Small Office Building, the peak parking demand is calculated as 22 parking spaces for the 18 apartment units and 6 parking spaces for the 2,400 SF of commercial space. TEC notes that the peak parking demand period for the commercial space will likely be during the daytime hours, and the peak parking demand period for the residential units will be during the evening hours. The two uses are therefore complementary with regard to parking demand, as they are able to share the parking spaces provided on the site.

DOCUMENT REVIEW AND RECOMMENDATIONS

Upon review of the site plans, TEC has compiled the following comments for the Board’s consideration:

1. The Applicant should confirm the proposed landscaping within the sight triangles is limited to ground cover lower than three feet in height or provides a canopy no lower than eight feet in height to ensure that the maximum sight lines are available and will remain clear. The

Applicant should commit to maintain vegetation along the site frontage consistently to ensure that sight lines remain unobstructed at the site driveway intersection with Willow Street.

2. Additionally, the Board could consider recommending the restriction of on-street parking within 25 feet to either side of the proposed driveway location. This would provide additional sight distance for vehicles exiting the site. This would equate to the loss of two on-street parking spaces.
3. For the proposed project, 18 parking spaces are required for the 18 dwelling units, and eight spaces are required for the 2,400 SF of commercial space, for a total of 26 parking spaces. The Applicant is proposing to provide 26 parking spaces, meeting the Zoning By-law requirement.
4. The 20-foot driveway width meets minimum industry standards. Within the site, an aisle width of 24 feet is provided to aid parking maneuvers within the site. The proposed driveway onto Willow Street is in the approximate location of the existing residential driveway and does not increase the number of curb cuts.
5. The plans show a sidewalk along the east side of the driveway, connecting internal sidewalks to the Willow Street sidewalk. TEC concurs that appropriate pedestrian connectivity is provided throughout the site.
6. The access into the site is a dead-end aisle without an area for fire apparatus to perform a U-turn movement, which will require a Town of Hamilton fire apparatus to reverse over 300 feet to exit the site should the apparatus pull fully into the site. A turning template should be provided to ensure a Town of Hamilton fire apparatus can fully access the site to reach the southeast corner of the building, turn around, and exit the site. Upon application of a turning template, should a fire apparatus not be able to complete a full U-turn to exit the site, the Applicant should consider modifications to provide hammerheads and/or provide for an engineered pervious area beyond the asphalt to allow for complete turns. TEC defers to the Town of Hamilton Fire Department for further comments.
7. The site plan should be updated to include a stop bar pavement marking and a stop sign at the site driveway intersection with Willow Street.

Please do not hesitate to contact me directly if you have any questions concerning our comments at 978-794-1792. Thank you for your consideration.

Sincerely,
TEC, Inc.
“*The Engineering Corporation*”



Elizabeth Oltman, PE
Director of Transportation Planning