

MEMORANDUM

93 Stiles Road, Suite 201, Salem, New Hampshire 03079 USA
800 Turnpike Street, Suite 300, North Andover, Massachusetts 01845 USA
Phone (603) 212-9133 and Fax (603) 226-4108
Email tepp@teppllc.com and Web www.teppllc.com

Ref: 1661
Subject: Response to Traffic Comments
Heritage Landing
Groton, Massachusetts
From: Kim Eric Hazarvartian, Ph.D., P.E., PTOE
Principal
keh@teppllc.com
Date: February 7, 2024

**INTRODUCTION**

TEPP LLC prepared *Traffic-Impact and Access Study, Heritage Landing, Groton, Massachusetts*, dated January 12, 2024, hereinafter *TIAS*. MDM Transportation Consultants, Inc. prepared the letter regarding Transportation Consulting Services, Heritage Landing 40B Development, Cow Pond Brook Road, Groton, MA, dated January 30, 2024.

COMMENT 1

Study Area: The selection of these study locations is consistent with guidelines for study area selection published by MassDOT (locations sustaining 100 vehicle-trip increases or that may experience more than a 5% change in volume); MDM concurs that these study locations are appropriate and in context with the likely traffic impacts for the Project.

RESPONSE

No response is required.

COMMENT 2

Traffic Volumes: MDM has reviewed baseline traffic volume data and confirms that September and October represent above-average traffic months based on MassDOT permanent count station data; hence no seasonal correction factors are required. We also acknowledge that the *TIAS* analysis reflects a “high-side” traffic volume condition along Cow Pond Brook Road from September 2023 during which soccer fields were in active/full use. Baseline traffic volumes presented in the *TIAS* therefore are representative of peak traffic volume conditions for the area, exceeding normal industry practice of adjusting baseline volumes for average conditions.

RESPONSE

No response is required.

COMMENT 3

Accidents/Crash Data: MDM acknowledges that crash data for the 2015-2019 period presents crash rates that below MassDOT averages, no fatalities are noted for the period evaluated and that study locations are not listed in the MassDOT HSIP list of high crash locations. However, MDM recommends that the crash database review be expanded to include the period 2021-2023 as these data are presently in the MassDOT crash portal and reflect several years additional data including the Pandemic period when crash severity in particular were generally at higher levels throughout the Commonwealth. These additional data may be used to confirm *TIAS* findings and to validate that safety countermeasures in the study area are not warranted, particularly for pedestrians and bicyclists.

RESPONSE

TEPP LLC obtained crash data, for January 1, 2016, through December 31, 2023, from the Massachusetts Department of Transportation (MassDOT) for the following locations:

- Lowell Road/Cow Pond Brook Road intersection
- Cow Pond Brook Road/Hoyt’s Wharf Road intersection
- Cow Pond Brook Road other locations

Table 1 is a summary of crash history. MassDOT crash-rate worksheets are attached.

For the Lowell Road/Cow Pond Brook Road intersection:

- 3 crashes were reported
- crash severities were 1 non-fatal injury and 2 property-damage only
- the crash rate was below MassDOT averages

For the Cow Pond Brook Road/Hoyt’s Wharf Road intersection:

- 1 crash was reported
- crash severity was non-fatal injury
- the crash rate was below MassDOT averages

For Cow Pond Brook Road other locations, no crash was reported.

These additional data confirm *TIAS* findings and validate that safety countermeasures in the study area are not warranted, particularly for pedestrians and bicyclists.

Table 1. Crash history for Cow Pond Brook Road.

		Locations, Crash Numbers, and Rates		
		Lowell Road Intersection	Hoyt’s Wharf Road Intersection	Other
Years	2016	0	0	0
	2017	0	1	0
	2018	0	0	0
	2019	0	0	0
	2020	1	0	0
	2021	1	0	0
	2022	1	0	0
	<u>2023</u>	<u>0</u>	<u>0</u>	<u>0</u>
	Total	3	1	0
	Average Per Year	0.38	0.13	0.00
Crash Rates	This Location	0.13	0.31	---
	MassDOT District 3 Average ^a	0.61	0.61	---
	MassDOT State Average ^a	0.57	0.57	---
Severity	Non-Fatal Injury	1	1	0
	Property-Damage Only	2	0	0
Type	Angle	3	0	0
	Single-Vehicle	0	1	0
Road Surface	Dry	3	0	0
	Snow	0	1	0
Weather	Clear	3	0	0
	Snow	0	1	0
Light	Daylight	2	0	0
	Dark—Road Not Lighted	1	1	0

Sources: For 2016 through 2020, Massachusetts Department of Transportation (MassDOT) Crash Portal, accessed December 27, 2023. For 2021 through 2023, MassDOT Crash Portal, accessed February 6, 2024.

^a From <https://www.mass.gov/service-details/intersection-and-roadway-crash-rate-data-for-analysis>, accessed May 2, 2023. MEV = 1,000,000 entering vehicles.

COMMENT 4

Vehicle Speeds: Resulting 85th percentile travel speeds (the speed at which regulatory speed limits are typically established and that serve as the basis for determining driveway sight line require-

ments) is 44 miles per hour (mph) southbound and 34 mph northbound in the site vicinity. This is well above the 25 mph regulatory speed limits for this segment of Cow Pond Brook Road, suggesting the need for countermeasures that reinforce the speed limit. Potential countermeasures are described under Mitigation which should be considered for implementation by Proponent to reinforce lower speeds and to enhance travel safety along Cow Pond Brook Road.

RESPONSE

See comment 17.

COMMENT 5

Driveway Sight Distance: MDM observed sight lines at the driveway that are in excess of 500 feet in both travel/approach directions for the site driveway location; MDM concurs applicable sight line criteria are met or exceeded.

RESPONSE

No response is required.

COMMENT 6

Sight Lines - Lowell Road at Cow Pond Brook Road. Measured sight lines are based on vehicle in stopped position beyond the existing painted stop bar/marking on Cow Pond Brook Road; sight lines may also be impaired by roadside vegetation at the intersection during growth seasons. Accordingly, MDM recommends as cited under Mitigation that (a) stop bar pavement markings and STOP sign be relocated for the Cow Pond Brook Road approach to an appropriate vehicle stopped position; (b) a STOP AHEAD sign be placed along Cow Pond Brook Road to reinforce driver awareness of the STOP condition; and (c) maintenance/clearing of roadside vegetation on the north side of Lowell Road within sight line triangles to ensure ample sight lines are provided.

RESPONSE

See comment 17.

COMMENT 7

Public Transportation: MDM notes that the Groton Council on Aging operates a van service serving qualified senior residents of the town which may also service the site upon request. Door-to-door transportation services provided through these vans pick up qualified residents at home and take them anywhere in town, to surrounding towns, and even to Boston area hospitals. Rides are

provided for medical appointments, social engagements, shopping, errands and more. Applicant should acknowledge and promote this service in its marketing materials for the project.

RESPONSE

The Applicant will incorporate this comment.

COMMENT 8

Traffic Growth: The applied growth rate of 1.0 percent annual exceeds regional growth trends derived from Central Transportation Planning Staff (CTPS) data of 0.02 percent for the Town of Groton. While there are other known area development projects in Groton, trips associated with these projects are well within the general growth factor applied in this case. The resulting 7-year horizon traffic volumes in the *TIAS* present a reasonable (and likely conservative) basis for analysis of future-year conditions.

RESPONSE

No response is required.

COMMENT 9

Planned Area Improvements: MDM concurs on the basis of review of MassDOT project database; however, Proponent should confirm with Groton Public Works whether any planned maintenance or improvements are planned for Lowell Road or Cow Pond Brook Road (both local jurisdiction roadways).

RESPONSE

The Applicant has begun to confirm with the Town.

COMMENT 10

Trip Generation: MDM concurs that appropriate methodology was employed in the *TIAS* to estimate project-related trips for weekday peak hour and daily conditions.

RESPONSE

No response is required.

COMMENT 11

Trip Distribution: MDM finds that basis for site trip distribution to be consistent with observed/documented trip patterns for area roadways which exhibit highly directional orientation, consistent with commuter travel to/from employment centers located east of the project site.

RESPONSE

No response is required.

COMMENT 12

Operations Analysis: MDM concurs with analysis results and finds that relative impact of the project is not expected to materially change operating levels or vehicle queuing at study locations. We note that a “sensitivity analysis” is also provided for Saturday conditions (representing an additional 10 percent increase in baseline Saturday peak hour volumes); this analysis also indicates that ample capacity will be available at study locations to accommodate the project traffic, albeit with slightly longer delays for turns from Cow Pond Brook Road.

RESPONSE

No response is required.

COMMENT 13

Site Parking: MDM finds the proposed parking supply adequate to accommodate anticipated peak parking demands per ITE Parking Generation (5th Edition) standards.

RESPONSE

No response is required.

COMMENT 14

Site Access Design:

- (a) MDM recommends that the applicable sight line triangles be shown on the Site Layout Plan
- (b) The Site Layout Plan should also include a note citing that “Signs, landscaping and other features located within sight triangle areas shall be designed, installed and maintained so as not to exceed 2.5-feet in height. Snow windrows located within sight tri-

angle areas that exceed 3.5-foot height above driveway grade or that would otherwise inhibit sight lines shall be promptly removed.”

- (c) Relocation or additional “No Parking” signs should be identified along the Site Frontage to ensure roadside parking associated with recreational field use/parking overflow does not impact driveway sight lines.

RESPONSE

The Applicant has or will incorporate (b) and (c). The Applicant is willing to provide No Parking signs along the site frontage if the Town officially prohibits such parking.

COMMENT 15

Site Circulation:

- (a) Applicant should confirm that the Site Layout Plan provides sufficient maneuvering area to accommodate the Town’s largest responding fire apparatus (ladder truck) and service vehicles (SU-30 type design vehicles or equivalent) by conducting AutoTurn® vehicle turn analysis/exhibits.

RESPONSE

The Applicant has or will incorporate this comment.

COMMENT 16

General Site-Plan Comments:

- (a) The potential for school bus access to the site with centralized pick-up/drop-off area should be considered and discussed with the school department to facilitate student bus loading and buses reversing direction to return to Lowell Road. Alternatively, a school bus waiting area/shelter should be considered at an appropriate location near the Site driveway.
- (d) *MUTCD*-compliant signs and markings should be identified on the site development plans for the site driveway.

RESPONSE

The Applicant suggests that school busses stop along Cow Pond Brook Road. School busses may reverse direction using Town facilities to the north along Cow Pond Brook Road. These facilities are maintained year-round.

COMMENT 17

Specific recommendations are noted for potential funding or implementation by Proponent as follows:

- (a) Lowell Road at Cow Pond Brook Road Signs and Markings. MDM recommends the STOP line pavement markings and STOP sign be relocated for the Cow Pond Brook Road approach to Lowell Road to allow an appropriate vehicle stopped position that maximizes driver sight lines. A STOP AHEAD sign is also recommended along Cow Pond Brook Road to reinforce driver awareness of the STOP condition. All signs and marking should conform to the latest guidance published in the *Manual on Uniform Traffic Control Devices (MUTCD)*.
- (b) Lowell Road Sight Line Enhancements. Field review indicates that sight lines looking east and west from the Cow Pond Road stop position may be impacted by roadside vegetation, substantially reducing driver visibility to oncoming vehicles. MDM advises that regular clearing/maintenance of roadside vegetation be conducted to ensure sight lines are maximized at this location.
- (c) Cow Pond Brook Road at Hoyt's Wharf Road Signs and Markings. All signs and markings at this intersection should be updated to conform to the latest guidance published in the *MUTCD* including All-Way Stop plaques at STOP signs.
- (d) Cow Pond Road Speed Advisory/Driver Feedback Signs. Placement of radar-based driver speed feedback signs should be considered by Proponent to reinforce lower speeds and to enhance travel safety along Cow Pond Brook Road for both travel directions in the vicinity of the proposed site driveway. Studies based on research published by the FHWA as summarized in the publication *Engineering Countermeasures for Reducing Speeds: A Desktop Reference of Potential Effectiveness*, May 2009. Reduction in 85th percentile speeds using speed feedback signs is estimated at an 11 percent reduction.
- (e) Cow Pond Brook Road Centerline Markings and "Jog line" markings. Centerline markings and edgeline/shoulder markings (also referred to as "Jog line" markings) along Cow Pond Brook Road would better define travel lane and roadway edges - a safety enhancement that would benefit both residents of the proposed development and the general public.

RESPONSE

The Applicant is willing to participate in (c), signs and markings at the Cow Pond Brook Road/Hoyt's Wharf Road intersection.

attachments

