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Transportation Engineers & Planners

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Ref: 9929

March 8, 2024

Mr. Brian Keating, Director
Community Development & Planning
Town of Lancaster
Prescott Building
701 Main Street
Lancaster, MA 01523

Re: Traffic Engineering Peer Review
Neck Farm Estates – 13 Neck Road
Lancaster, Massachusetts

Dear Brian:

Vanasse & Associates, Inc. (VAI) has completed a review of the materials that have been submitted on behalf of Neck Farm, LLC (the "Applicant") in support of the proposed multifamily residential development to be known as Neck Farm Estates and located at 13 Neck Road in Lancaster, Massachusetts (hereafter referred to as the "Project"). The Applicant is requesting the issuance of a Comprehensive Permit for the Project pursuant to M.G.L. c.40B, §§ 20 through 23. Our review focused on the following specific areas as they relate to the Project: i) vehicle and pedestrian access and circulation; ii) Massachusetts Department of Transportation (MassDOT) design standards; iii) Town Zoning requirements as they relate to access, parking and circulation; and iv) accepted Traffic Engineering and Transportation Planning practices. The Applicant has submitted the following materials which are the subject of this review:

1. *Application for a Comprehensive Permit,* Neck Farm Estates, 13 Neck Road, Lancaster, Massachusetts, submitted by Blatman, Bobrowski, Haverty & Silverstein, LLC on behalf of Neck Farm, LLC and dated October 19, 2023;

2. *Permit Site Plan,* Neck Farm, 13 Neck Farm Road, Lancaster, Massachusetts; Hancock Associates; June 24, 2022, last revised October 3, 2023 (the "Site Plans"); and

3. *Transportation Impact Statement,* Proposed 40B Residential Development, 13 Neck Road, Lancaster, Massachusetts; MDM Transportation Consultants, Inc.; February 26, 2024 (the "February 2024 TIS").

In addition, VAI reviewed the site locus in order to validate the existing conditions context of the Project and to observe factors related to the design and location of the access to the Project site, internal circulation and potential off-site improvements.

The following details our review of the materials that have been submitted in support of the Project, with our comments indicated in italicized text and those that require a response **bolded** for identification.

PROJECT DESCRIPTION

The Project will entail the construction of an 11-unit, multifamily residential development with supporting parking to be located at 13 Neck Road in Lancaster, Massachusetts. The residential units will be dispersed between three (3) 2.5- to three-story buildings, with the building parallel to Neck Road to contain seven (7) residential units and the two buildings in the southern portion of the Project site to contain two (2) residential units each. The Project site contains 0.57± acres of land bounded by Neck Road to the north; residential properties to the south and east; and Center Bridge Road to the west. The Project site consists of previously disturbed areas that are currently vegetated and include areas of open and wooded space.

Access to the Project will be provided by way of a two-way looped driveway that will intersect the south side of Neck Road approximately 150 feet east of Center Bridge Road and the east side of Center Bridge Road approximately 180 feet south of Neck Road, respectively.

On-site parking will be provided for 21 vehicles, including two (2) handicapped accessible parking spaces, or a parking ratio of 1.9 parking spaces per unit. The parking will be located along the driveway and consists of 90 degree surface parking spaces.

FEBRUARY 2024 TIS

The February 2024 TIS was prepared in a professional manner and was performed under the direction of Robert J. Michaud, P.E. (MA P.E. No. 38101, Civil), and provides: i) an existing conditions context for the Project site as it relates to roadway and traffic volume conditions along Main Street (Route 70), Neck Road and Center Bridge Road; ii) a review of motor vehicle crash data for the Neck Road/ Center Bridge Road intersection; iii) trip-generation calculations for the Project; iv) sight distance measurements for the Project site driveways; and v) a review of the anticipated parking demands of the Project.

Our comments pertaining to the information that is presented in the February 2024 TIS follow.

Study Area

The study area that is assessed in the February 2024 TIS included Main Street (Route 70), Neck Road and Center Bridge Road, and the triangular intersection that is formed by the intersection of Center Bridge Road and Neck Road which comprises three (3) separate intersections.

Comment: *The study area is appropriate and is commensurate with the predicted volume of traffic that is expected to be produced by the Project (less than 10 vehicle trips during the peak traffic volume hours).*

Existing Conditions Context

A description of existing conditions on the roadway network that serves the Project site was provided that included roadway width; pedestrian and bicycle accommodations (where provided); traffic control devices, including signs and pavement markings; posted speed limits; and abutting land uses. As noted in these descriptions, a sidewalk is provided along the Project (east) side of Center Bridge Road between

Main Street and the railroad crossing to the south of the Project site; sidewalks are not provided along Neck Road. Public transportation services are not currently provided that are accessible at the Project site and formal bicycle facilities (i.e., marked bicycle lanes, separated bicycle facilities or shared-use pathways) are also not currently provided.

Comment: *We note that Main Street (Route 70) provides sufficient width (combined travel lane and usable shoulder) to support bicycle travel in a shared traveled-way configuration (i.e., bicyclists and motor vehicles sharing the traveled-way).*[1]

Baseline Traffic Data

Baseline traffic volume data was collected by means of: i) automatic traffic recorder counts (ATRs); and ii) turning movement counts (TMCs) and vehicle classification counts; that were conducted in February 2024. The ATRs were conducted on Neck Road, east of Center Bridge Road, and on Center Bridge Road, south of Neck Road, over a 24-hour period on Thursday, February 1, 2024, that included the collection of vehicle travel speed data. The TMCs were conducted at the intersections that comprise the Center Bridge Road/Neck Road intersection also on Thursday, February 1, 2024, during the weekday morning (7:00 to 9:00 AM) and evening (4:00 to 6:00 PM) peak periods. These time periods were selected for analysis as they are representative of the peak traffic volume periods for both the Project and the adjacent roadway network.

A review of seasonal adjustment data available from MassDOT indicated that traffic volumes within the study area during the month of February are approximately 9.0 percent lower than those that occur under "average-month" conditions. Accordingly, the February traffic volumes were adjusted upward by 9.0 percent in order to be representative of "average-month" conditions.

Based on the collected data, Neck Road accommodates approximately 250 vehicles per day (two-way, 24-hour volume) on an average weekday, with approximately 26 to 27 vehicles per hour (vph) during the weekday peak hours. Center Bridge Road accommodates approximately 2,410 vehicles per day on an average weekday, with approximately 193 to 242 vph during the weekday peak hours. Both roadways have a posted speed limit of 30 miles per hour (mph). The measured prevailing travel speeds[2] were found to be approximately 30 mph on Neck Road and 35/37 mph on Center Bridge Road.

Comment: *The data collection effort and seasonal adjustment were completed following accepted standards.*

We note that MassDOT no longer requires pandemic-related adjustment of traffic counts performed after March 2022 except in locations where the predominant land use consists of offices or similar uses.[3] *Given that the predominant land use within the study area consists primarily of residential properties, a pandemic-related adjustment was not applied to the traffic count data.*

[1] A minimum combined travel lane and paved shoulder width of 14-feet is required to support bicycle travel in a shared traveled-way condition.

[2] The prevailing travel speed is also known as the 85th percentile travel speed and is the measured speed at which 85 percent of the observed vehicles traveled at or below during the observation period.

[3] *25% Design Submission Guidelines*; MassDOT Highway Division, Traffic and Safety Engineering; Revised May 31, 2022.

Motor Vehicle Crash Data

A review of motor vehicle crash information obtained from MassDOT for the most recent five-year period available (2016 through 2020, inclusive) was undertaken for the Center Bridge Road/Neck Road intersection. Based on this review, a total of four (4) crashes were reported to have occurred at the intersection, or an average of 0.8 crashes per year. All four crashes were classified as angle-type crashes that occurred during daylight, with three (3) of the crashes resulting in property damage only and one (1) resulting in personal injury. The calculated motor vehicle crash rate (i.e., number of motor vehicle crashes occurring per million entering vehicles (MEV)) was found to be above the MassDOT average crash rates for similar intersections. A review of the MassDOT high crash location database indicated that there are no (0) no Highway Safety Improvement Program (HSIP) eligible high crash locations in the vicinity of the Project site.

Comment: *The motor vehicle crash analysis was completed following accepted standards and we agree with the findings of the analysis. Specific recommendations have been provided that are designed to enhance safety at the Center Bridge Road/Neck Road intersection (discussion follows).*

Trip-Generation

The traffic characteristics of the Project were developed by the Applicant's engineer using trip-generation statistics published by the Institute of Transportation Engineers (ITE)[4] for a similar land use as that proposed. ITE Land Use Code (LUC) 220, *Multifamily Housing (Low-Rise)*, was used to develop the trip characteristics for the Project. The table below summarizes the peak-hour traffic characteristics of the Project based on 11 residential units.

TRIP GENERATION SUMMARY

Time Period	Vehicle Trips		
	Entering	Exiting	Total
Average Weekday:	37	37	74
Weekday Morning Peak-Hour:	1	3	4
Weekday Evening Peak-Hour:	4	2	6

Traffic volumes associated with the Project were assigned to the roadway network based on a review of Journey-to-Work data for residents of the Town of Lancaster obtained from the U.S. Census and refined based on a review of existing traffic patterns. Using this methodology, the traffic volumes associated with the Project were assigned as follows:

[4] *Trip Generation*, 11th Edition; Institute of Transportation Engineers; Washington, DC; 2021.

TRIP DISTRIBUTION

Roadway	Trip Assignment (%)
Main Street to/from the North	30
Main Street to/from the West	15
Center Bridge Road to/from the South	50
Neck Road to/from the East	5
TOTAL:	**100**

Comment: *We agree with the methodology that was used to develop the traffic characteristics of the Project and the resulting values, and we agree with the trip distribution pattern that was established for the assignment of Project-related traffic.*

Project Impact Assessment

The potential impact of the Project on the transportation infrastructure was quantified based on the increase in traffic that the Project represents over existing traffic volume conditions. Based on this comparative assessment, the Project represents less than a 2 percent increase in peak-hour traffic volumes at the Center Bridge Road/Neck Road intersection, or an increase of approximately one (1) added vehicle every 20 minutes with consideration of the dispersal of trips to the intersection approaches.

Comment: *We concur with the qualitative assessment of the impact of the Project at the Center Bridge Road/Neck Road intersection and offer that the predicted increase in traffic at the intersection is within the range of normal traffic volume fluctuations over the course of a typical week (Monday through Friday) and would not be readily apparent outside of the immediate proximity of the Project site.*

Sight Distances

An evaluation of sight lines at the Project site driveway intersections with Center Bridge Road and Neck Road was completed following American Association of State Highway and Transportation Officials (AASHTO)[5] standards and using a 30 mile per hour (mph) approach speed along Neck Road and a 35/37 mph approach speed along Center Bridge Road, which is 5 to 7 mph above the posted speed limit in the vicinity of the Project site (30 mph) and is consistent with the measured prevailing travel speeds along Center Bridge Road. Based on this evaluation, it was determined that the available sight lines exceed the recommended minimum sight distances for safe operation of the driveways (a minimum sight distance of 200 feet is required for an approach speed of 30 mph and a minimum sight distance of 270 feet is required for an approach speed of 37 mph; the available sight distances exceed 360 feet).

[5] *A Policy on Geometric Design of Highway and Streets*, 7th Edition; American Association of State Highway and Transportation Officials (AASHTO); Washington D.C.; 2018.

Comment: *We agree with the sight distance evaluation and the conclusion that the available sight lines exceed the recommended minimum sight distance for safe operation of the driveways.*

Parking

A review of parking demand data documented by the ITE[6] for similar multifamily residential communities and parking demand observations conducted at multifamily residential communities located in eastern Massachusetts was undertaken. Based on this review, it was determined that the peak parking demands for the Project would be expected to range from 14 to 17 parking spaces, or a ratio of 1.54 parking spaces per unit. Given that the Project will provide 21 parking spaces, or a parking ratio of 1.9 parking spaces per unit, it was concluded that the parking supply is sufficient to accommodate the anticipated parking demands of the Project.

Comment: *We agree that the proposed parking supply (21 parking spaces) should be sufficient to meet the anticipated parking demands of residents and guests, and falls within the range of values documented by the ITE for multifamily residential developments situated in a similar setting (i.e., limited or no access to public transportation).*

Vehicle Turning Analysis

A vehicle turning analysis was be provided using the AutoTurn© software for the Lancaster Fire Department design vehicle and a service/delivery vehicle (SU-30 design vehicle). This analysis demonstrated that the subject vehicles are able to access and maneuver within the Project site in an unimpeded manner.

Recommendations

The following recommendations were offered in the February 2024 TIS:

- Access/Egress Improvements – Driveways should be designed to accommodate emergency vehicles and delivery trucks, and exiting vehicles should be placed under "STOP" sign control with marked stop lines. Plantings and structures should be designed and maintained so as to not impede sight lines.
- Pedestrian and Bicycle Accommodations – Sidewalks are provided within the Project site that connect to the existing sidewalk along Center Bridge Road. Bicycle racks should be provided within the Project site that are located proximate to the building entrances and weather protected bicycle parking should be provided for residents.
- Center Bridge Road/Neck Road – The Center Bridge Road/Neck Road intersection should be placed under all-way "STOP" sign control with the accompanying signs and pavement markings at an in advance of the intersection.
- Neck Road – The Neck Road north approaches to Center Bridge Road and to Neck Hill Road should be placed under "STOP" sign control with accompanying stop lines.

[6] *Parking Generation Manual*, 6th Edition; Institute of Transportation Engineers; Washington D.C.; October 2023.

- Transportation Demand Management (TDM) – Consider implementation of the following TDM measures:
  - Bicycle Facilities.
  - Preferential Parking and Incentives for Low-Emission Vehicles.
  - Electric Vehicle Charging Stations
  - Unbundled Parking
  - On-Site Amenities
  - Pedestrian Infrastructure

Comment T1: We agree with the recommended improvements, which should be included as a part of any conditions of approval that may be granted for the Project and should be completed prior to the issuance of the first Certificate of Occupancy for the Project subject to receipt of all necessary rights, permits and approvals. The bicycle racks and the location of the weather-protected bicycle parking should be shown on the final Site Plans. In addition, the suggested TDM measures, should also be required as a part of the Project and should be expanded to include the following:

- **A transportation coordinator should be assigned for the Project, who may also have other responsibilities, to coordinate the TDM program; and**
- **A "welcome packet" should be provided to new residents providing the name and contact information for the transportation coordinator and detailing available public transportation services, bicycle and walking alternatives, and other commuting options.**

SITE PLANS

The following comments are offered with regard to our review of the Site Plans that have been prepared by Hancock Associates in support of the Project as revised through October 3, 2023:

Comment S1: The Project site driveways and the internal drive should be widened to a minimum of 23-feet (24 feet is suggested) in order to accommodate parking maneuvers or a vehicle turning analysis should be provided using the AutoTurn© software that demonstrates that vehicles can enter and exit the proposed parking spaces without maneuvering into the adjacent parking space. Alternatively, consideration could be given to establishing a one-way circulation pattern and reconfiguring the parking to be angled.

Comment S2: The sight triangle areas for the Project site driveways should be shown on the Site Plans along with a note to indicate: "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 accumulation (windrows) located within sight triangle areas that exceed 3.5-feet in height or that would otherwise inhibit sight lines shall be promptly removed."

Comment S3: A narrative should be provided describing how tenant moves will be accommodated and trash/recycling managed, including the scheduling of such activities and where they will occur for each building.

Comment S4: Consideration should be given to providing short-term parking (up to 10 minutes) for rideshare vehicles and delivery service providers.

Comment S5: The location of the bicycle racks and weather protected bicycle parking should be shown along with the number of bicycles that can be accommodated.

Comment S6: A note should be added stating: "All Signs and pavement markings to be installed within the Project site shall conform to the applicable specifications of the *Manual on Uniform Traffic Control Devices* (MUTCD).[7]"

Comment S7: STOP-signs and marked STOP-lines should be added for motorists exiting the Project site driveways.

Comment S8: Americans with Disabilities Act (ADA) compliant wheelchair ramps should be provided for crossing the Center Bridge Road Project site driveway.

This concludes our review of the materials that have been submitted to date in support of the Project. Written responses to our comments should be provided so that we may continue our review on behalf of the Town. If you should have any questions regarding our review, please feel free to contact me.

Sincerely,

VANASSE & ASSOCIATES, INC.

Jeffrey S. Dirk, P.E., PTOE, FITE
Managing Partner

Professional Engineer in CT, MA, ME, NH, RI and VA

JSD/jsd

[7] *Manual on Uniform Traffic Control Devices* (MUTCD), 10th Edition; Federal Highway Administration; Washington, DC; 2009.