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MEMORANDUM

Date:	March 6, 2019 Job No.: 6329
To:	Jennifer Caira, Chief Planner City of Newton Planning & Development Department 1000 Commonwealth Avenue Newton Centre, MA 02459
From:	Jeffrey J. Maxtutis, AICP Jason R. Plourde, P.E., PTP
Subject:	**Transportation Engineering Peer Review** **Comments on Revised Building Program Traffic Generation Memorandum, February 14, 2019** **The Northland Newton Development** **Newton, Massachusetts**

The Northland Newton Development is proposing a mixed-use development to be located along Needham Street and Oak Street in Newton, Massachusetts. This review focuses on the *Revised Building Program and Traffic Generation Memorandum,* VHB, February 14, 2019; and Revised Site Plans (C-4, C-6.1, C-6.2, C-6.3), Applicant's development team, February 14, 2019. A *Response to BETA Group, Alta Planning + Design comments Memorandum,* VHB, February 22, 2019 has been submitted to the City of Newton and is referenced in comments as necessary.

As detailed within the February 14, 2019 *Revised Building Program and Traffic Generation Memorandum*, The Northland Newton Development build program has changed as follows:

Proposed Development Program

Land Use	Previous Build Program	Revised Build Program	Change
Office Space	180,000 sf	180,000 sf	0 sf
Residential	822 units	800 units	(22 units)
Retail/Restaurant/Active Space	237,000 sf	115,000 sf	(122,000 sf)
Parking	1,953 spaces	1,550 spaces	(403 spaces)

TRIP GENERATION

In accordance with MassDOT *Transportation Impact Assessment Guidelines*, the future traffic volumes were developed to evaluate the project's impacts over a seven-year design horizon (2025). Other design horizons may be required depending on such factors as the nature, location, and scheduling of the development as well as the extent of off-site mitigation measures.

Comment 1: In the February 22, 2019 VHB response Memo, the Applicant noted that "Should it be determined that phasing is desired or extended construction necessary, supplemental analysis can be provided to demonstrate operations of such." **No additional response necessary.**

RE-OCCUPANCY OF EXISTING USES

The site currently consists of 62,600 square feet of retail space, 180,000 square feet of office space, and 257,000 square feet of manufacturing space. Similar to the October 2018 *Traffic Impact and Access Study*, a vehicular trip credit was applied for re-occupancy of the existing retail and office uses on the site. Consistent with BETA's Comment 2.18 in the January 2019 *Transportation Engineering Peer Review*, the following concern also applies to VHB's February 14, 2019 *Revised Building Program and Traffic Generation Memorandum*:

Comment 2: In accordance with MassDOT guidelines, developments that generated traffic within the past 2 years but are currently vacant can be accounted for as being re-occupied with by-right uses (either based on the traffic studies prepared for those projects or estimated using ITE methodologies). If the vacant space within the existing site was unoccupied for more than 2 years from the date of the traffic study, however, then a vehicle trip credit cannot be made for re-occupancy of the existing site with by-right uses.

The VHB response in the February 22, 2019 Memo: The office space on-site is currently vacant and was vacant in 2017 during the time of the traffic counts. However, the lease for C&J Clarks America, Inc. (Clarks Shoes) ran through the end of December 2016. The lease on the office space was occupied within 2 years of when the traffic counts were conducted and when the TIA was submitted to the City of Newton, as well as within two years of the submission of the Environmental Notification Form (ENF) to MEPA and MassDOT (August 2017).

The Applicant should confirm that the only vacant office space at the time of the traffic counts was associated with Clarks Shoes and that this tenant occupied the entire office space on the existing site.<Also see comment and response 2.18 in BETA Memorandum dated March 7, 2019.>

PROPOSED USES

TRIP-GENERATION ESTIMATES

As proposed, the revised mixed-use development would include 800 residential units, 180,000 square feet of office space, and 115,000 square feet of restaurant and retail space, and 4,000 square feet of community center space. Unadjusted trip-generation estimates for the modified build program were calculated using ITE trip-generation data. The unadjusted trips do not account for the modal split, internal capture, or pass-by characteristics of the proposed development. **BETA concurs with the trip-generation methodologies used in determining the unadjusted vehicle trips for the proposed uses.**

PERSON TRIPS

The ITE trips were then converted to person trips to be able to estimate the modal split of site trips. VHB used the same methodology presented in the October 2018 *Traffic Impact and Access Study* to determine the person trips for the revised build program. While BETA finds this methodology acceptable, the calculations in converting the person trips for the revised build program were not provided for review. To proceed with the peer review, BETA developed person trip calculations using

data published by the United States Department of Transportation (USDOT) and Federal Highway Administration (FHWA) summarized in Table 16 of the 2009 National Household Travel Survey (vehicle occupancy to or from work = 1.13, shopping other family/personal errands = 1.78). **BETA finds this methodology to be reasonable in determining person trips for the proposed development.**

INTERNAL CAPTURE TRIPS

Similar to the October 2018 *Traffic Impact and Access Study*, a multi-use trip credit was applied to each of the proposed uses to account for those patrons that may visit more than one of the uses on the site. Based on the methodology presented in the ITE *Trip Generation Handbook*, internal capture rates were applied to determine the number of person trips occurring entirely within the site. By subtracting the internal trips from the overall site generation, these resulting trips represent the persons entering and exiting the site from the adjacent roadway system. **BETA finds this methodology of determining internal site trips to be acceptable and in conformance with standard traffic engineering practice.**

MODE SHARE SPLITS

The proponent is proposing to implement an on-site shuttle bus program with direct connections to nearby transit stations and to Cambridge and Boston. As part of VHB's October 2018 *Traffic Impact and Access Study*, two different trip-generation estimates were developed: (1) existing mode share percentages (based on 2010 US Census data for the City of Newton), and (2) a robust shuttle service. To provide a conservative (worse-case) scenario, the trip-generation estimates provided in VHB's February 14, 2019 *Revised Building Program and Traffic Generation Memorandum* were calculated only using the existing mode share percentages. In addition and at BETA's request, the revised build program used more recent data are available from the U.S. Census 2015 American Community Survey (ACS).

Comment 3: While BETA finds this methodology reasonable in determining a mode split of the proposed site trips, the calculations used in developing the different modes of transportation for patrons of the revised build program were not provided for review. Since these calculations are more detailed in nature than converting vehicle trips to person trips, **the Applicant should provide the mode share split calculations for BETA to confirm the accuracy of the findings.**

PASS-BY TRIPS

Comment 4: The volume of pass-by trips could change if the mode split results need to be modified. **Therefore, the Applicant may need to revisit the pass-by trip calculations upon BETA's review of the mode split trips.**

BUILD TRAFFIC VOLUMES

The next step in determining the site-generated trip impacts on the adjacent roadway system was to recalculate the person trips back to vehicle trips.

Comment 5: The calculations made in converting person trips back to vehicular trips were not provided for review. **Therefore, the breakdown of the calculations used to generate**

the values should be provided for review. In addition, these final vehicle trips may need to be modified upon BETA's review of the mode split trips.

Comment 6: The site-generated networks and the 2025 Build traffic volumes for the revised build program were not provided for review. **Therefore, the Applicant should provide this information for BETA to confirm the accuracy of the evaluated traffic volumes and the associated traffic impacts.**

INTERSECTION ANALYSES

Capacity analyses were performed for the study intersections with the 2025 Build traffic volumes for the revised development program based on the methodology and procedures set forth in the *Highway Capacity Manual* (HCM). The following five study area intersections were evaluated:

- (1) Chestnut Street and Route 9 westbound service road;
- (2) Chestnut Street and Route 9 eastbound service road;
- (6) Needham Street, Oak Street, and Christina Street;
- (9) Needham Street, Charlemont Street, and north site driveway (Charlemont Street Extension); and
- (14) Winchester Street, Needham Street, and Dedham Street.

Comment 7: Consistent with BETA's Comments 2.3 and 2.6 in the January 2019 *Transportation Engineering Peer Review*, the following concerns also applies to VHB's February 14, 2019 *Revised Building Program and Traffic Generation Memorandum*:

The Capacity Analysis Worksheets show that the Chestnut Street unsignalized intersections with the Route 9 eastbound and westbound service roads were evaluated as an All-Way Stop-Control (AWSC) intersection. However, the Chestnut Street northbound and southbound approaches; however, are under free flow traffic conditions with the other approaches under STOP-sign control. In the February 22, 2019 Memo, VHB acknowledged congestion in this corridor and will consider additional modeling if required by the City. **BETA finds this methodology to be reasonable.**

Comment 8: The traffic signal splits and phases at the Needham Street, Oak Street, and Christina Street intersection appear to be incorrect under 2025 Build traffic-volume conditions. For Phase 2 (Needham Street northbound approach) and Phase 6 (Needham Street southbound approach) permissive phase, the green time for Phase 2 should be extended to end at the same time as Phase 6. **Therefore, this intersection should be reanalyzed with this adjustment to the traffic signal parameters.**

Similar to BETA's Comment 2.24 in the January 2019 *Transportation Engineering Peer Review*, some of the lane groups within the study area are shown to exceed capacity (50th percentile and 95th percentile maximum queue lengths reflected with the "~" and "#" are shown, respectively). These queue lengths

could be longer with the blocking and spillover problems. Based on a review of the signalized intersection analyses (Tables 3 and 4 and in the Appendix), the following locations are identified with both of these footnotes.

- (6) Needham Street, Oak Street, and Christina Street; and
- (14) Winchester Street, Needham Street, and Dedham Street.

Comment 9: **Since VHB previously agreed that the Needham Street corridor is congested, BETA had identified additional mitigation measures to reduce the impact of the project and improve traffic operations along the Needham Street and Winchester Street corridors and at other study intersections. This comment remains and is applicable to the revised Build program. Also see comment and BETA response 2.27 regarding Mitigation in BETA Memorandum dated March 7, 2019.**

In accordance with MassDOT guidelines, a development would be considered to have an impact at an intersection if the added site trips result in degradation in level of service. In addition, a development may be considered to have a significant impact if post-development trips result in a delay of 10 seconds or more even if there is no degradation in level of service. Based on a review of the 2025 No-Build and 2025 Build conditions (shown in Tables 3 and 4, and in the Appendix), the following off-site study area intersections were noted to satisfy these MassDOT criteria and thus are required to assess options to mitigate those impacts.

- (1) Chestnut Street and Route 9 westbound service road:
  - Weekday PM peak hour
- (6) Needham Street, Oak Street, and Christina Street:
  - Weekday Midday peak hour
- (9) Needham Street, Charlemont Street, and north site driveway (Charlemont Street Extension):
  - Weekday Midday peak hour
  - Weekday PM peak hour
  - Saturday Midday peak hour

Comment 10: The Applicant should develop improvements for these study area intersections since they satisfy MassDOT's criteria for locations with significant impact due to the increase in traffic associated with the proposed development.

There are other study intersections, beyond the five that were evaluated in the February 14, 2019 *Revised Building Program and Traffic Generation Memorandum,* that will be impacted by the proposed project. These were noted in the January 2019 *Transportation Engineering Peer Review.* Improvements should be identified for the additional impacted study intersections. Also see comment and

BETA response 2.27 regarding Mitigation in BETA Memorandum dated March 7, 2019.

PARKING

As proposed, the number of on-site parking spaces has been reduced from 1,953 spaces to 1,550 spaces.

Comment 11: A comparison of the proposed parking spaces could not be made to the City of Newton's parking requirements because the breakdown of retail space, restaurant space, medical office space, health club space, and community space was not provided. **Therefore, the Applicant should provide a breakdown of the specific land uses in order to determine compliance with local parking requirements. See comments and responses 5.10 and 5.11 regarding Parking in BETA Memorandum dated March 7, 2019.**

As detailed within VHB's October 2018 *Traffic Impact and Access Study*, Institute of Transportation Engineers (ITE) and Urban Land Institute (ULI) guidelines were used in conducting a shared parking assessment to estimate a parking demand for the previously proposed development. As identified in BETA's Comment 5.10 in the January 2019 *Transportation Engineering Peer Review*, there were some discrepancies with the parking ratios used and, as such, the previously proposed number of parking spaces did not meet the parking demand per ITE and ULI methodologies.

Comment 12: Since no calculations or documentation were provided in VHB's February 14, 2019 *Revised Building Program and Traffic Generation Memorandum* for the revised development, the proposed number of parking spaces (1,550) could not be verified. **Therefore, the Applicant should provide the parking space calculations and methodology for the revised build program. See comments and responses 5.10 and 5.11 regarding Parking in BETA Memorandum dated March 7, 2019.**

SITE CIRCULATION AND ACCESS

Revised Site Plans dated February 14, 2019 for sheets C-4, C-6.1, C-6.2, and C-6.3 were provided by the Applicant. The revised site plans show the following changes from the August 6, 2018 plans:

- Building 5 has been split into 3 separate buildings on the same footprint (5a, 5b and 12)
- One-way entrance driveway to garage added to Building 5a from Main Street
- Two-way garage driveway access added to Building 5b from Tower Road
- Building 6 has been split into 3 separate buildings on the same footprint (6a, 6b and 6c)
- A new pathway designated as "Laneway" has been added between Unnamed Street and Pettee bisecting the Building 5 and 6 clusters
- The west wing of Building 4 has been extended
- Two-way garage driveway access added to Building 4 on Main Street
- The loading dock for Building 4 has been lengthened for 35 feet to 55 feet long
- The parking circulation roadway for Building 4 has been increased from 24 feet to 28 feet
- New structure K added near southwest corner of Building 6a
- The width of Main Street has been increased from 20 feet to 24 feet

- The two approach lanes on Pettee Lane to Oak Street and one departure have been increased from 10 feet wide to 11 feet wide
- The intersection of Main Street and Unnamed Road is no longer raised
- The loading dock for Building 4 has been moved from the Village Green to Main Street
- The 14 on-street parking spaces around the Village Green have been removed
- On-street parking spaces on Tower Road have been reconfigured
- The residence drop-off/pick-area on the west side of Unnamed Road has been removed
- On-street parking has been added on both sides between Buildings 5b and 9
- Vehicle access to Building 10 has been eliminated
- On-street parking on Tower Road north of Pettee Lane has been eliminated
- The pedestrian/bike connection between the Greenway and Tower Road has been widened from 8 feet to 16 feet

Comment 13: Responses to the comments from the January 2019 *Transportation Engineering Peer Review* regarding on-site circulation, access/egress, pedestrians and bicycles have been provided in the February, 22, 2019 Memorandum by VHB. No additional comments.