



April 8, 2019

Ref: 08363.53

Mr. John E. Corey, Jr. PE  
City Engineer  
City of Woburn City Hall  
100 Common Street  
Woburn, MA 01801

Re: Woburn Mall Traffic and Site Plan Peer Review

Dear Jay,

Vanasse Hangen Brustlin, Inc. (VHB) has completed a review of the materials submitted on behalf of Edens (the "Applicant") in support of the proposed Woburn Mall Mixed-Use Development to be located at the intersection of Mishawum Road and Commerce Way in the City of Woburn, Massachusetts (hereafter referred to as the "Project"). The Project has been submitted to the City for consideration of the issuance of a site plan review and special permit. Our review focused on the following specific areas as they relate to the Project: i) vehicle and pedestrian access and circulation; ii) City Zoning requirements as they relate to access, parking and circulation; and iii) accepted Traffic Engineering and Transportation Planning practices.

In support the Project, the Applicant submitted the following materials which are the subject of this review:

- *Traffic Impact and Access Study, Proposed Woburn Mall Mixed-Use Development, Mishawum Road;* prepared for Edens; Prepared by MDM Transportation Consultants, Inc. dated January 2019.
- *Site Plan Review Application Submission, Woburn Village (sheets C-3, C-4, C-9 through C-12)* prepared by Bohler Engineering, dated January 31, 2019.

In addition, VHB reviewed the site locus in order validate the existing conditions context of the Project and the study area that was assessed in the 2019 Traffic Impact and Access Study and to observe factors that could impact the design and location of the access to the Project site and potential off-site improvements.

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Based on our review of the 2019 TIAS and the accompanying Site Plans, we have determined that the materials were prepared in a professional manner and following the applicable standards of care. We have requested that the Applicant's engineers:

- provide additional supporting information on the way the traffic generation was calculated and distributed onto the surrounding roadway network;
- consider additional enhancements to the transportation improvement program as it relates specifically to the multi-modal nature of the Project;
- review and revise specific elements of the Site Plans with regard to the driveway design and locations, internal circulation, and plan notations; and
- provide parking demand data to substantiate the parking ratio that is to be provided for the overall development plan.

The following summarizes our review of the materials submitted in support of the Project. Our comments are indicated in italicized text.

## **JANUARY 2019 TRAFFIC IMPACT AND ACCESS STUDY**

### **General Observations and Commentary**

*COMMENT 1: The January 2019 TIAS was prepared in a professional manner and following the applicable standards of care; however, the study was not stamped and signed by the Professional Engineer in responsible charge for the preparation of the document as required pursuant to Massachusetts General Law. A letter should be provided by the Professional Engineer attesting to their oversight in preparing the document and providing their Massachusetts Professional Engineer Registration number and discipline.*

*COMMENT 2: No discussion was provided in the traffic study related to the expected parking demands at the site. The Applicant should provide supporting information related to the parking demand for the various uses (considering the influence of both cinema-related demands as well as restaurant and supermarket uses) to confirm that there's adequate parking provided on the site. The Applicant is encouraged to consider the impacts of shared parking on the overall site plan's usage and note that the residential uses appear to have their own designated parking area and should not be part of that calculation. VHB is concerned that there's not enough parking to support the various uses on the site and that this will lead to traffic circulating throughout the site seeking spaces and impacting general traffic flow into and out of the site.*

### **Existing Conditions**

#### **Study Area**

The study area that was evaluated for the Project consisted of seven intersections along Commerce Way and Mishawum Road including four site driveways and the intersections of:

- Commerce Way at Mishawum Road



- Mishawum Road at Industrial Way
- Mishawum Road at Washington Street

*COMMENT 3: This study area is generally sufficient to evaluate the potential impact of the Project on the transportation infrastructure based on the expected trip-distribution pattern for the Project, and encompasses the major intersections located proximate to the Project site where the Project is expected to result in a noticeable increase in peak-hour traffic volumes.*

### Traffic Volumes and Data Collection

Traffic volume data was collected at the study area intersections by means of: i) manual turning movement counts (TMCs) and vehicle classification counts conducted on Thursday July 20, 2017; Saturday April 7, 2018; Tuesday April 10, 2018; Thursday September 20, 2018; Tuesday December 4, 2019; and Wednesday December 5, 2018; and ii) automatic traffic recorder (ATR) counts conducted on Tuesday December 4, 2019; and Wednesday December 5, 2018 in the vicinity of the Project site.

Additionally, pedestrian and bicycle information were also gathered during these time frames to provide a baseline information on the number of users who take advantage of these modes of transportation.

*COMMENT 4: The data collection effort and establishment of the seasonal adjustment (none required) were completed in accordance with standard Traffic Engineering and Transportation Planning practices, and we are in general agreement that the resulting data provides a reasonable basis from which to assess the potential impact of the Project on the transportation infrastructure.*

### Pedestrian and Bicycle Facilities

A description of the current pedestrian accommodations within the study area was included as a part of the intersection descriptions. No documented bicycle facilities were noted in the traffic study.

*COMMENT 5: As documented by the Applicant's engineer, the study area roadways and intersections currently provide formal pedestrian accommodations throughout the study area. No noted formal bicycle accommodations are provided along the surrounding roadway networks.*

### Motor Vehicle Crash Summary

Motor vehicle crash information was obtained for the study area intersections and roadway segments from MassDOT for the 4-year period 2012 through 2016, inclusive. Based on a review of this information, many of the study area intersections averaged only a few reported motor vehicle crashes over the 4-year review period. Except for the Mishawum Road/Mall Driveway (East) location, the study area intersections were found to have a motor vehicle crash rate (average number of motor vehicle crashes reported per year per million vehicles traveling through an intersection or per million vehicle miles traveled along a roadway segment) that was below the MassDOT average motor vehicle crash rates for similar intersections.



The Mishawum Road/Commerce Way intersection was reported to have experienced 66 crashes over the 4-year review period, yet was found to have a motor vehicle crash rate that did not exceed the MassDOT average crash rate for a signalized intersection.

Similarly, the Mishawum Road/Mall Driveway (East) location was reported to have experienced 66 crashes over the 4-year review period and was found to have a motor vehicle crash rate that exceeded the MassDOT average crash rate for a signalized intersection. The Applicant's engineer also reviewed the MassDOT statewide High Crash Location List and indicated that the Mishawum Road/Mall Driveway (East) location is included in MassDOT's Highway Safety Improvement Program (HSIP) database as a high crash cluster location for 2013-2015. The study notes that this location is "subject to the preparation of a Road Safety Audit (RSA) to identify potential short-term/operational improvements that could be implemented by the Proponent and medium/long-range improvements by MassDOT."

*COMMENT 6: The motor vehicle crash analysis was completed in accordance with MassDOT standards and following standard Traffic Engineering and Transportation Planning practices, and we are in agreement with the findings of the analysis. Later in the report, the Applicant is committed to conducting the RSA and implementing any short-term improvement actions that result from the finding of that effort.*

## Public Transportation

Public transportation services are provided within the study area by the MBTA's Commuter Rail at two locations: i) the Mishawum Station (located approximately 1/4 mile from the Project) and the Anderson RTC/Woburn Station (located approximately 1.5 miles from the Project along Commerce Way).

*COMMENT 7: There is no mention of how or if connections to these MBTA stations will be enhanced or promoted other than through the TDM measures. The Applicant should discuss how these stations will/won't impact the marketing of the site and how they might impact traffic volumes at the site.*

## Future Conditions

### No-Build Conditions

Traffic volumes within the study area were projected to 2025, which represents a 7-year planning horizon from the existing conditions base year (2018) that was presented in the TIAS. The future condition traffic volume projections were developed by: i) applying a background traffic growth rate to the 2018 Baseline traffic volumes; and ii) adding traffic associated with specific development projects by others that may increase traffic volumes within the study area beyond that accounted for by the background traffic growth rate.

The Applicant's engineer reviewed historic traffic growth data obtained from the MassDOT's Permanent Count Station in order to establish the background traffic growth rate and conducted a review of the MEPA files to determine if there were any specific development projects by others that would result in an increase in traffic volumes within the study area that would exceed the background traffic growth rate.



Based on these findings, the Applicant's engineer incorporated traffic volumes associated with several specific development projects by others into the future condition traffic volume projections, including the following:

- Woburn Mall (120,518 SF of vacant retail space)
- Woburn Landing (158,125 SF hotel with 250 rooms, a 4,876 SF Chick-fil-A restaurant, and 13,771 SF restaurant).
- Woburn Toyota Expansion (indoor project amenities to a 147,704 SF facility).

Based on a review of historic traffic volume data documented by MassDOT's permanent count station, traffic volumes along Route 128 have increased by an average of 0.3 percent over the past several years. In order to provide a conservative (high) analysis scenario, the applicant used a 1.0 percent per year compounded annual background traffic growth rate was used.

*COMMENT 8: We are in general agreement with the methodology that was used to develop the future No-Build condition traffic volume projections for the Project, including the background traffic growth rate used in the base calculations, the inclusion of the specific development projects by others. The Applicant should confirm with the City of Woburn if there are any other projects that may impact traffic volumes in the area through their Planning Department.*

## Build Conditions

Future Build condition (with the Project) traffic volume projections were developed by the Applicant's engineer using trip-generation statistics published by the Institute of Transportation Engineers (ITE) for similar land uses as those proposed (Cinema, Shopping Center, and Apartments). A combination of the observed existing Woburn Mall traffic was combined with the proposed modifications to the Project to develop the unadjusted trip generation for the development (Table 3 of the TIAS), and then a series of reductions were applied to the base ITE trip-generation calculations in order to account for pass-by trips (i.e., trips to these uses that are made by persons that are or will be travelling within the study area for other purposes that will also patronize one or both of these uses and are not new trips to the area) or shared trips (i.e. trips that are made between the uses on the site who don't need to travel off site) which are shown in Table 4 f the TIAS.

*COMMENT 9: There are a number of clarifications needed on the traffic generation portion of the TIAS. The Applicant should review the below comments and provide a summary of responses to which we can then asses future Project-related impacts with:*

- *VHB would like more clarity on the breakdown of the various retail uses. If the majority of the small retail parcels were developed as restaurant uses (as described to VHB and the City at an introductory department head meeting several months ago), the traffic and parking generation at the site could be different than what is being proposed. A simple chart listing the square footages of the various uses would be helpful (general retail, residential restaurant, cinema, and supermarket).*



- *The plans note that there is a 350-unit residential project being proposed, the study notes that the Project is 400 units. Please provide some clarity on this.*
- *The TIAS states that there are internal capture credits taken for the trips between the existing retail/Market Basket uses, the proposed retail/cinema, and proposed residential. None of the backup for this ratio is provided in the appendix. The only internal capture sheets provided in the appendix reflect trips between the existing uses/counts and the backfill for the vacant existing uses. These credits result in up to 60% credit from internal capture, which seems extremely high. Please provide full accounting of the internal capture credits for review.*
- *It appears that the way the consultant calculated the "current programing" trip gen is by taking the existing counted trips, running a prorated ITE calculation for the vacant uses and then taking an internal capture between the two. We have concerns about taking internal capture trips for the existing uses, specifically if there's a pro-rated calculation already being performed. They are either based on existing counts (which would already have internal capture credits taken for the existing uses on site) or the projected counts (which are based on a larger sized development and internal capture is therefore built into the ITE projections). If the maximum internal capture allowed for retail is 20% and the existing mix of uses is already hitting that maximum, then no additional internal capture credit should be taken for the infill.*
- *The technical back up in the appendix materials has some of entering/exiting % which appear to be different than what is reported in the traffic study. The applicant should clarify the differences and correct as needed.*
- *Lastly, VHB is having a hard time following the methodology for infilling the 120 ksf of vacant space on the Site. Specifically, there's no back up for the calculations provided and the tables provided in the report aren't clear. The tables and accompanying supporting documentation should clearly demonstrate:*
  - › *Existing Trips based on ITE projections for the uses already active on the site and/or based on observed trips;*
  - › *Future Trips projected based on ITE standardized methodology for each of the various land uses being proposed;*
  - › *Credits for internal capture and pass-by applied to the new uses; and*
  - › *A summary of the proposed new trips.*

*VHB also notes that the existing trips counted at the driveways are almost double the ITE projections for the existing uses still in existence at the facility. Once the actual trip generation for the development is clarified, VHB will review the results of the analysis on the surrounding roadway network and provide commentary on the overall impacts attributed to the development.*

## Traffic Distribution

Traffic volumes associated with the Project were assigned onto the study area roadway network based on a review of: i) existing travel patterns within the study area; ii) population and employment centers; iii) 2010 U.S. Census Journey-to-Work data; and iv) other traffic studies conducted in the area.



*COMMENT 10: We are in general agreement with the methodology that was used to develop the anticipated traffic characteristics of the Project and the trip distribution pattern. During the peak commuter hours, it's unlikely that many of the left-turns onto Mishawum Road will do so at the unsignalized intersection given the likely delays that they will encounter, but with only 5% of the overall traffic assigned to this specific movement for both the residential and retail uses, it's unlikely that this will change the results in any meaningful manner.*

## Traffic Operations Analysis

*COMMENT 11: Given the uncertainty on how the traffic generation may or may not be impacted by the clarifications requested in the section above, VHB did not review the analysis results to any significant level of detail except to note that the analysis was conducted in a professional manner and is reflective of the our observations of the current conditions within the study area.*

*COMMENT 12: There is a location on the site where the queue of vehicles is expected to exceed the available storage within the on-site roadways. The Applicant should provide updated analysis to correct these observations or modify the site plans to accommodate these expected queues of traffic.*

*Specifically, the traffic study notes (in Table 12) that the site driveway's signalized southbound approach to Mishawum Road provides 350+/- feet of storage. The site plan only shows 150'+/- of storage before meeting the first internal four-way intersection. Similarly, the through/right-turn lane is noted to be 150'+/- in the study, but measures only 80'+/- on the site plan. Vehicle queues on these approaches are projected to be in excess of the storage provided during the weekday evening and Saturday midday peak hours, potentially leading to internal congestion and a burden placed on other driveways serving the site. As this appears to be an important location in the overall access to and from Mishawum Road main driveway, extensive queues should be avoided as is practical.*

## Recommendations

The following infrastructure commitments were presented as a part of the August 2017 TIAS:

- Provide on-site sidewalks connecting the various buildings to the adjacent sidewalk network along Commerce Way and Mishawum Road and install bicycle racks throughout the site and at the residential building.
- Prepare a Road Safety Audit (RSA) and implement any short-term safety/operational improvements based on those findings.
- The Proponent commits to monitoring traffic volumes and signal operations at the study area intersections following completion of the Project and will provide data and recommendations to the City for implementation.
- Modify the site driveway at Commerce Way to enhance pedestrian and vehicle interactions and upgrade the traffic signal to provide for additional pedestrian accommodations
- Provide a right-turn exit lane from the supermarket parking area to Commerce Way
- Optimize the signal timing at the Commerce Way/Site driveway intersection.



- Become a member of the Route 128 TMA.

*COMMENT 13: We are in agreement with the infrastructure commitments that were outlined by the Applicant's engineer and would encourage the City to endorse these commitments through the site plan review process. Additionally, VHB suggests that the following additional or modified commitments be considered as a part of the Project:*

- *Evaluate the safety and functionality of connecting the project site to the Anderson RTC/MBTA station using an off-road pathway with neighboring property owners and/or enhancing the on-road connections to these facilities as needed.*
- *Evaluate the existing pedestrian crossing at the traffic signal located at the Mishawum Road/Site Driveway as there would appear to be a significant pedestrian demand being created between the uses being proposed on the Project site and the hotel/restaurant uses on the opposite side of the roadway.*
- *The commitment to conducting the Road Safety Audit (RSA) and implement any short-term safety/operational improvements based on those findings should be more specifically defined as follows:*
  - › *Within 6 months of receiving site plan approval (or some other early action date), the Applicant will conduct an RSA at the intersection of Mishawum Road and the Site Driveway (East) through MassDOT.*
  - › *Prior to receiving a certificate of occupancy for any portion of the proposed revised development, the results of the RSA's short-term recommendations will be summarized in a technical memorandum to be provided to the City of Woburn's Engineering Department within 2-months after the completion of the RSA. The memorandum will include specific recommendations to improve traffic safety at the intersection that is based on the findings of the RSA. If so directed by the Engineering Department, the Applicant shall implement the recommended short-term improvements at the intersection subject to receipt of all necessary rights, permits and approvals*
- *The commitment to traffic monitoring at the study area intersections should be more specifically defined as follows:*
  - › *Within 4-months of achieving 80 percent occupancy of the Project, the Applicant will conduct a post-occupancy traffic operations assessment at the study area intersections consisting of the following elements:*
    - *Performing manual turning movement and vehicle classification counts during the weekday morning (7:00 to 9:00 AM) and evening (4:00 to 6:00 PM) peak periods; and*
    - *Evaluate traffic operations (levels of service, motorist delays and vehicle queuing) for both the weekday morning and evening peak hours.*
- *The results of the monitoring program should be summarized in a report to be provided to the City of Woburn's Engineering Department within 2-months after the completion of the data collection effort. The report will include specific recommendations to improve traffic operations at the various site driveway intersection to the extent that it is determined that one or more movements are operating below a level-of-service (LOS) of "D". If so directed by the Engineering Department, the Applicant shall*



*implement the recommended improvements at the intersection subject to receipt of all necessary rights, permits and approvals.*

## SITE PLANS

COMMENT 14: *The following comments are offered with respect to our review of the Site Plan Application Plans prepared by Bohler Engineering, Inc. and dated January 31, 2019 (hereafter collectively referred to as the "Site Plans").*

- *The site plans look professionally prepared and are easy to follow at the reduced scale provided by the applicant's site engineer.*
- *The applicant should identify on the potential areas for snow storage and/or present a management plan for how to remove snow from the lot during times of average to peak snowfall.*
- *Similarly, cart corrals for the supermarket use should also be identified on the plan and those spaces not considered in the overall parking count.*
- *VHB notes that the plans appear to be reasonable from a life-safety response perspective, however we defer to the City Fire Chief and/or other appropriate reviewer to provide commentary on the adequacy of the site plan from an emergency response perspective.*
- *The parking numbers presented in the zoning analysis table note that the site complies and exceeds the minimum number of parking spaces needed at the site (based on a 1.5 space/unit residential count and a 3.8 space/ksf retail/commercial rate). The zoning chart references the Woburn Mall Smart Growth Overlay District (WM-SGOD) as the source of the zoning needs for the site.*

*From a practical perspective, the retail rate (3.8 spaces/ksf) seems to be low given the potentially high percentage of restaurant uses and the supermarket to be located on the site. Typically, ITE and ULI recommend rates of:*

- › *2.5-3.2 spaces/ksf of general retail;*
- › *8.0-10.0 spaces/ksf range for restaurant uses; and*
- › *4.0-5.0 for supermarket uses.*

*There's not clear guidance from ITE/ULI on the cinema-related parking demands, but this should also be considered in the overall count as well to the best of their ability. For this reason, VHB note that the applicant should demonstrate that there is adequate parking provided on the site for the various uses and considers the application of ITE's and ULI's Shared Parking principles in this assessment as it's clear there are a number of complimentary uses on the site that can share parking as needed.*

- *A truck turning analysis should be provided for a single-unit (SU) truck (representative of a moving van, trash/refuse truck or similar) and/or WB-50 or even WB-63, depending on the expected delivery areas these users are intended to travel to. The turning analysis should demonstrate that the subject vehicles can access and circulate within the Project site in an unimpeded manner, including within the parking garage to the extent that large vehicle access to the garage is needed.*



- *Internal to the Project site, circulating roads and drive aisles should be a minimum of 24-feet in width for two-way travel and a minimum of 20-feet in width for one-way travel, or as required to accommodate truck access and fire truck turning maneuvers. These accommodations appear to be reflected on the Site Plans.*
- *Where pedestrian crossings are proposed, marked crosswalks and wheelchair ramps should be shown. The Applicant's engineer should confirm that the wheelchair ramps will be compliant with the Americans with Disabilities Act (ADA) and will include detectable panels.*
- *A note should be added to the Site Plans 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)."*
- *A narrative should be provided indicating the how tenant moves will be managed, including the location of moving vehicle staging. The moving vehicle staging area should be reflected in the truck turning analysis.*
- *A narrative should be provided indicating how for trash/recycling will be managed, including the location where these items will be picked-up. The pick-up location should be reflected in the truck turning analysis.*
- *A bicycle storage area has been provided within the parking garage.*
- *A school bus waiting area should be provided at an appropriate location defined in consultation with the City of Woburn School Department.*

#### **SITE PLAN A (Sheet C-9)**

- *The garage access to the residential component appears to be provided only via the rear of the site. VHB was not able to review the internal circulation of the garage:*
  - › *How big is the garage (# of spaces)*
  - › *Is it only available to residents and how will this be managed?*
  - › *Is there designated visitor parking?*
- *The gate to the right of the garage entrance appears to be there to restrict residents from traveling through the loading area of the retail stores (which is a reasonable application and assumption).*
  - › *Who will have access to this gate?*
  - › *Should the garage access provide signage directing residents to only turn left from the entrance?*
  - › *Has any consideration been given to allowing residential traffic (only) to travel through and behind these stores?*
- *The one-way stretch between the residential component and the cinema area notes that only left-turns are allowed at the end of its corridor. The Applicant should provide some reasoning as to why residential drivers shouldn't be allowed to travel straight through this intersection from the one-way section? Consideration of a "residential traffic only" signage might be a better sign indicator as ALL*



*residential traffic will now be directed to arrive and depart via one approach direction from Mishawum Road.*

#### **SITE PLAN B (Sheet C-10)**

- *The site plans should consider identifying where the supermarket cart corrals will be located in the parking areas.*
- *As a practical matter, the applicant should also identify where snow storage will take place and identify a management plan for this situation (which might be provided on other plans that VHB did not have access to).*

#### **SITE PLAN C (Sheet C-11)**

- *The applicant should provide turning movement (AutoTurn© or similar) indicating that a WB-50 can reasonably access the cinema/retail loading dock (or larger if the intention is to have larger vehicles access this area).*
- *According to the City, loading docks should not face the major roadway. The cinema loading docks would appear to face Mishawum Road. The Applicant should work with the City to clarify this requirement and address as needed.*
- *Similarly, the applicant should consider heightened signage and striping clearly demarking the difference between the parking garage access and the loading zone area for those patrons arriving and departing that are not familiar with the overall area.*
- *There are a number of parking spaces that, because of the placement of the pedestrian crossings, have stop lines noted halfway behind their space. In some cases, drivers backing out of these spaces would do so by backing directly into the pedestrian crosswalk. Consideration should be given to shifting the crosswalk away from the back-out area of these spaces and adjusting the overall parking numbers provided, if needed.*

#### **SITE PLAN D**

- *There are a number of parking spaces that, because of the placement of the pedestrian crossings, have stop lines noted halfway between their space. In some cases, drivers backing out of these spaces would do so by backing directly into the pedestrian crosswalk. Consideration should be given to shifting the crosswalk away from the back-out area of these spaces.*

### **SUMMARY**

VHB has completed an initial review of the materials submitted on behalf of Edens in support of the proposed Woburn Mall Mixed Use Development to be located at the site of the Woburn Mall in Woburn, Massachusetts. Our review focused on the following areas as they relate to the Project: i) vehicle and pedestrian access and circulation; ii) MassDOT design standards; iii) City Zoning requirements as they relate to access, parking and circulation; and iv) accepted Traffic Engineering and Transportation Planning practices.

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Based on our review of the TIAS and the accompanying Site Plans, we have determined that the materials were prepared in a professional manner and following the applicable standards of care. Written responses to our comments should be provided so that we may continue our review of the Project on behalf of the City.

This concludes our review of the materials that have been submitted to date in support of the Project. If you should have any questions regarding our review, please feel free to contact me.

Sincerely,

Vanasse Hangen Brustlin, Inc.

A handwritten signature in cursive script, appearing to read "Christine Trearichis".

CHRISTINE TREARICHIS FOR ROBERT NAGI

Robert L Nagi, PE

Principal, Transportation Planning & Operations  
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