

August 6, 2021

Mr. Ara Yogurtian
Assistant Director of Community Development
Town of Belmont
19 Moore Street
Belmont, MA 02478

RE: McLean Zone 3 – 115 Mill Street
Transportation Peer Review

Dear Mr. Yogurtian:

As requested, BSC Group, Inc. (BSC) conducted a peer review of the Traffic Impact Assessment (TIA) prepared by Vanasse & Associates Inc. (VAI) dated April 2021 for a proposed residential off Olmsted Drive within Zone 3 of the McLean District in Belmont, Massachusetts.

The purpose of this review is to ensure that the traffic analysis conforms to industry standards, to confirm that the traffic study methods are appropriate for the setting, and to ensure that the recommendations and proposed mitigation adequately address potential project impacts and are consistent with the Town of Belmont's recommended guidelines for transportation improvements. Access to the site will be provided by several driveways off of Olmsted Drive via Pleasant Street. Each driveway will operate as full access (allowing left and right-turns into and out of the site). An internal roadway network will be constructed throughout the site to serve the proposed residences. The site is mostly vacant, with one existing building and parking lot that will be removed as part of the Project.

The key findings of our review of the TIA are presented in the following sections. **BSC's comments and recommendations are presented in bold.**

Scope of Review

The following topics were reviewed in the TIA as part of the peer review:

- Study methodology
- Existing traffic volumes and transportation infrastructure
- Motor vehicle crash analysis
- No-Build traffic volumes

Engineers

Environmental
Scientists

Custom Software
Developers

Landscape
Architects

Planners

Surveyors



- Build traffic volumes
- Sight distance evaluation
- Traffic operations analysis
- Traffic signal warrant analysis
- Proposed mitigation/recommendations

Study Methodology

The traffic analysis provided in the TIA presented an evaluation of baseline conditions (year 2021 with adjustments) and future conditions projected seven years (year 2028) with and without the Project. The study area consists of the intersections of Trapelo Road at Pleasant Street and Pleasant Street at Olmsted Drive. The proposed driveways were also evaluated as part of the future conditions.

Traffic data was collected in November 2020 at each study area location by conducting turning movement counts (TMCs) during the peak commuter periods (7-9 AM and 4-6 PM). Automatic traffic recorders (ATRs) were also used to collect vehicular volumes and speeds along Pleasant Street. The evaluation included an operations analysis of the baseline conditions, an evaluation of future conditions (year 2028) that incorporates expected traffic growth without the Project, and an evaluation of future conditions that includes expected Project-generated traffic. An evaluation of motor vehicle crashes was also conducted to identify any existing safety deficiencies within the study area. Specific recommendations were presented in the TIAS to address off-site impacts including a Traffic Signal Warrants Analysis (TSWA) to study the potential for the installation of a traffic signal at the Pleasant Street/Olmsted Drive intersection.

- 1. The study methodology is consistent with the requirements of the Town of Belmont and the Massachusetts Department of Transportation (MassDOT) guidelines for traffic impact assessment.**
- 2. The primary impacts of the Project will occur along Pleasant Street. The selected study area is consistent with expected Project impacts.**

Existing Traffic Volumes

The Applicant collected TMCs at the study area intersections between 7-9 AM and 4-6 PM on a weekday in November 2020. Due to the historically low traffic volumes and reduced commuter rail usage, specific adjustment factors were applied to the TMCs to create a baseline condition representative of pre-2020 conditions. The Applicant compared traffic volumes collected in November 2020 with available traffic data from April 2018 that was collected as part of Belmont's Town Wide study. The comparison was conducted to determine an appropriate adjustment factor to account for the historically low traffic volumes in 2020. The ATRs also collected vehicular speeds along Pleasant Street and indicated that the 85th percentile speed is 34 miles per hour (mph).

The Applicant also provided a qualitative description of nearby pedestrian, bicycle, and transit facilities. The MBTA operates bus lines and the commuter rail in proximity to the Project, with stops at Waverley Square. Sidewalks are provided along the east side of Pleasant Street and pedestrian facilities (crosswalks, sidewalks, and signal equipment) are



provided at the intersection of Trapelo Road/Pleasant Street.

- 3. The data was collected during November 2020 during typical weekday commuter peak periods. Due to the reduction of typical commuter traffic during 2020, the Applicant applied adjustment factors into the baseline traffic conditions. The peak hour volumes were adjusted upward by 40 percent based on the traffic volume comparison. BSC agrees with the methodology to increase the 2020 traffic volumes upward. However, the traffic volumes oriented to/from Olmsted Drive may require a different adjustment factor, since it serves residential uses only. BSC requests that the Applicant develop existing traffic volumes for Olmsted Drive based on the current residential development at Waverley Woods and The Woodlands and compare to the traffic volumes that were used in the TIA. The Applicant should discuss if there are any significant differences between the trip generation estimates and the existing traffic volumes used in the TIA and what the impacts of any differences would be on any conclusions or analyses.**

Safety Evaluation

The Applicant provided an evaluation of sight distances at the proposed driveway intersections along Olmsted Drive and at the intersection of Pleasant Street/Olmsted Drive and a crash analysis of the study area roadways and intersections. Based on the evaluation, sufficient sight distance is provided at the intersection of Pleasant Street/Olmsted Drive.

The motor vehicle crash analysis reviewed collisions throughout the study area over the five year period of (2013-2017). The analysis indicates that a total of 49 crashes occurred at the intersection of Trapelo Road at Pleasant Street and one crash occurred at the intersection of Pleasant Street at Olmsted Drive during this time period. The TIAS also indicated that the Trapelo Road/Pleasant Street intersection is an HSIP eligible cluster, which means that the cluster experienced a high rate of crashes when compared to other similar intersections in the region.

- 4. The sight distance along Olmsted Drive is sufficient and should be properly maintained at all times, including during snow events. The Applicant should commit to the continued maintenance of any vegetation that may impact sight lines at all internal driveways and at the intersection of Pleasant Street at Olmsted Drive.**
- 5. BSC recommends that the Applicant provide updated crash data between 2017 – present for the intersection of Trapelo Road at Pleasant Street. A traffic signal was recently installed at this intersection and the more recent data may indicate how the signal installation impacted crash patterns at the intersection.**

No-Build Traffic Volumes

To develop future traffic conditions, the Applicant applied a 1.0 percent annual growth rate to the existing traffic volumes and added traffic expected to be generated by a proposed marijuana facility at 1010 Pleasant Street.

- 6. The 2027 No-Build traffic volumes were developed in accordance with standard traffic engineering practice.**



Build Traffic Volumes

Trip Generation

The TIAS estimated the trips generated by the Project based on data provided in the *Institute of Transportation Engineers (ITE)'s Trip Generation, 10th Edition*, using Land Use Code (LUC) 221 – Mid-Rise Residential and LUC 252 – Senior Adult Housing. The Applicant applied transit usage rates of 5 percent to the age-restricted housing and 10 percent to the multi-family housing. The Project is expected to generate 610 trips on an average weekday, 36 trips during the weekday morning peak hour, and 46 trips during the weekday evening peak hour.

- 7. The ITE LUCs that were used are appropriate for the proposed land uses. BSC agrees with the trip generation methodology used in the TIAS and the application of the transit usage reduction.**

The Applicant provided a comparison of the expected trip generation estimates from the proposed development with the limits outlined in the Traffic Mitigation and Monitoring Agreement (TMMA) published in 1999 for the redevelopment of the McLean Hospital site.

- 8. Based on the trip generation comparison, the estimates for the proposed project are within the limits established for Zone 3 in the TMMA. The actual trip generation will be monitored as part of post-construction counts. In the event that the actual trip generation estimates exceed the limits, the Applicant will be required to comply with the measures described in the TMMA.**

Trip Distribution and Assignment

The estimated peak hour Project-generated trips related to the residential portion of the Project were assigned to the study area intersections based on existing journey-to-work data for residents living in the Town of Belmont. Based on this evaluation, the trips were distributed along Pleasant Street and Trapelo Road. Approximately 40 percent of the trips will travel to/from the north on Pleasant Street, 45 percent will travel to/from the east on Trapelo Road, and 15 percent will travel to/from the west on Trapelo Road. The Applicant added the expected Project-generated trips to the No-Build traffic volumes to develop the Build condition traffic volumes. The Applicant noted that traffic volumes will increase throughout the study area between 6 and 21 vehicles during the peak hours.

- 9. BSC agrees with the usage of journey-to-work data and existing traffic patterns to develop trip distribution patterns for the Project.**

Traffic Operations Analysis

The Applicant conducted a traffic operations analysis for the 2021 Existing baseline conditions, the 2028 No-Build conditions, and the 2028 Build conditions. The operations analysis presented an evaluation of vehicular delays, queues, volume-to-capacity ratios, and level-of-service (LOS).

The operations analysis indicates that the intersections operate at LOS D or better and that the queues will be contained within the available storage. These operations will continue in the future with and without the Project. The unsignalized intersections operate with minor to



moderate delays and minimal queuing.

- 10. The traffic operations analysis was conducted in accordance with traffic engineering standards. The Project is not expected to significantly contribute to the queues or delays at the study intersections during normal operations.**

Traffic Signal Warrant Analysis

The Applicant conducted a Traffic Signal Warrant Analysis (TSWA) for the intersection of Pleasant Street at Olmsted Drive to determine if the installation of a traffic signal is warranted. The TSWA included adjusted existing traffic volumes, incorporated traffic volumes from planned developments, and incorporated expected traffic volumes from the build-out of Zone 3 and Zone 4 subdistricts. Based on the TSWA, a traffic signal is not expected to be warranted with the buildout of the Zone 3 and Zone 4 subdistricts.

- 11. BSC reviewed the TSWA analysis and verified that the traffic volumes that form the basis of the evaluation are accurate and based on standard industry methodology and that a signal is not expected to be warranted with the buildout of Zone 3 and Zone 4. Comment #3 of this review letter requested the Applicant to reevaluate traffic volumes along Olmsted Drive based on trip generation estimates. Any updates to traffic volumes on Olmsted Road should be reflected in the TSWA.**
- 12. The November 22, 1999 TMMA indicates that McLean agreed to fund the design and construction of signaling and adding a left turn lane at the intersection of Pleasant Street at McLean Driveway (now named Olmsted Drive) prior to the occupancy of an research and development building (Zone 4) or the senior housing (Zone 3). Based on a review of the intersection, the left-turn lane is already installed and the installation of a traffic signal is not currently warranted based on the expected traffic volumes. Please also refer to Comment #3 to provide updates to the TSWA.**
- 13. The Applicant is required to conduct post-construction traffic monitoring counts as directed by the TMMA. In the event that the counts exceed the trip generation thresholds allowed in the TMMA, the Applicant should review how this impacts the TSWA and revisit the need for a traffic signal in the future, with the inclusion of the Zone 4 traffic volumes.**

Proposed Recommendations and Conclusions

The Applicant recommended that Olmsted Drive be improved by installing striping to delineate the travel lanes and a stop-line at the intersection with Pleasant Street. The Applicant also included a proposed transportation demand management (TDM) plan.

- 14. BSC recommends that the Applicant provide additional measures in the TDM plan to further promote non-vehicular modes of travel. The Project is located in proximity to Waverly Square, which provides access to the MBTA commuter rail and bus lines and should serve the residents of the proposed project. The Applicant should commit to providing residents with transit subsidies such as discounted commuter rail and bus passes to promote travel via public transit.**



The Applicant should also provide on-site bicycle storage for visitors through the installation of bicycle racks throughout the site and for residents through secure, weather-proof storage areas.

The Applicant has committed to providing funds to initiate the create of a Transportation Management Association (TMA) for the area. The creation of a TMA should be coordinated through the Town of Belmont, MassCommute, and the local regional planning agency (Metropolitan Area Planning Council).

- 15. BSC also reviewed the conceptual site plan as part of the transportation review. The review indicates that there existing pedestrian access route from Zone 3 to the public roadway network runs partially along Olmsted Drive and is diverted through an existing McLean Hospital property at the corner of Trapelo Road and Pleasant Street. Based on our site visit, pedestrian access from Pleasant Street is not well defined and should be upgraded to provide specific wayfinding information. The circuitous nature of the on-site roadways may be difficult to navigate for visitors and deliveries. To provide better wayfinding information, the Applicant should develop a comprehensive on-site wayfinding signage to direct both motorists and pedestrians to destinations points such as Pleasant Street, Trapelo Road, and Waverley Square.**
- 16. The Applicant should construct new on-site and upgrade existing pedestrian facilities to be ADA-compliant. This includes the installation of detectible warning panels at all curb ramps and the installation of high-visibility crosswalks at intersections. It is expected that there will be pedestrian activity between the Project site and Waverley Square. The Applicant should also review and upgrade as necessary the terminus of the pedestrian route through the McLean Hospital property at the intersection of Trapelo Road at Pleasant Street. Currently, pedestrians must walk through an existing driveway and parking lot to access the path that connects with Olmsted Drive.**
- 17. The internal roadways and site driveways should be designed to accommodate emergency vehicles. Signage and pavement markings should be compliant with standards in the Manual on Uniform Traffic Control Devices (MUTCD). Adequate sight distance should be maintained at each driveway. BSC requests that the Applicant provide vehicle turning maneuvers on a site plan to show that the site can accommodate the City's fire and emergency vehicles. BSC recommends that the northerly portion of Olmsted Drive be maintained to accommodate a secondary point of access/egress for emergency vehicles.**
- 18. BSC requests that the Applicant describe or show on the site plans how the delivery and loading for each of the buildings will operate. The site should be able to accommodate the largest single-unit box truck (SU-40) for moving operations.**

BSC reviewed the TIAS submitted for the proposed McLean Zone 3 residential development in Belmont, Massachusetts. We recommend that the Town of Belmont require the Applicant to respond to and address all BSC's numbered comments in this letter and submit a response letter for our review.



Please do not hesitate to contact our office with any inquiries you may have.

Very truly yours,

A handwritten signature in black ink, appearing to read 'Michael A. Santos', is positioned below the closing 'Very truly yours,'.

BSC Group, Inc.

Michael A. Santos, PE, PTOE
Project Manager

cc: Sam Offei-Addo, PE, PTOE