

Ref: 7516

November 2, 2016

Ms. Emily Wentworth  
Senior Planner: Zoning/Special Projects  
Town of Hingham  
210 Central Street  
Hingham, MA 02043

Re: Traffic Engineering Peer Review  
Broadstone Bare Cove – 230 Beal Street  
Hingham, Massachusetts

Dear Emily:

Vanasse & Associates, Inc. (VAI) has completed a review of the materials submitted on behalf of Broadstone Bare Cove Alliance, LLC (the “Applicant”) in support of the proposed Broadstone Bare Cove residential development to be located at 230 Beal Street in Hingham, Massachusetts (hereafter referred to as the “Project”). The Project has been submitted to the Town for consideration of the issuance of a Comprehensive Permit under the provisions Massachusetts General Laws, Chapter 40B, Sections 20-23 (Chapter 40B). Our review focused on the following 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.

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

1. *Traffic Impact and Access Study*, Alliance Residential, 230 Beal Street, Hingham, MA; VHB; October 2016;
2. *Memorandum* dated October 28, 2016 prepared by Mr. Robert L. Nagi, P.E., Principal at VHB, Re: Broadstone Bare Cove Park, Hingham, MA; and
3. *Comprehensive Permit Application Plans (Site Plans)*, Broadstone Bare Cove, 230 Beal Street, Hingham, MA; Allen & Major Associates, Inc.; August 12, 2016, last revised October 25, 2016.

In addition, VAI reviewed the site locus in order validate the existing conditions context of the Project and the study area that was assessed in the October 2016 *Traffic Impact and Access Study* (the “October 2016 TIAS”), and to observe factors that could impact the design and location of the access to the Project site and potential off-site improvements.

Based on our review of the information submitted in support of the Project, 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 engineer provide sight distance measurements for the Project site driveway and additional information to substantiate the adequacy of the parking supply that will be

provided for the Project. In addition, we have provided specific comments on the *Site Plans* that should be reviewed by the Applicant's engineer with regard to: i) access design and internal circulation; ii) moving/trash/recycling vehicle access and management; iii) parking layout; and iv) fire truck access and maneuvering.

The following summarizes our review of the materials submitted in support of the Project. Our comments are indicated in *italicized text*, with those requiring responses or additional information **bolded**.

## **PROJECT DESCRIPTION**

As proposed, the Project will entail the construction of a residential apartment community to be known as Broadstone Bare Cove and located at 230 Beal Street in Hingham, Massachusetts. The Project will include between 200 and 220 apartment units to be situated in two (2) three to four story buildings that will include supporting amenities. The Project site encompasses approximately 12.059± acres of land bounded by Beal Street and Lynch Field to the north; Lynch Field and the Back River Townhomes to the east; and the Back River Wildlife Sanctuary and Reservation to the south and west. At present, the Project site is occupied by a 24,600± sf building that is tenanted by the Brown Bear Children's Center and an insurance company, with associated parking areas and appurtenances, that will be removed to accommodate the Project.

Access to the Project site will be provided by way of the existing driveway that serves the Project site and intersects the south side of Beal Street approximately 90 feet east of the driveway to Lincoln Plaza. As proposed, exiting movements from the Project site driveway will be restricted to right turns only by way of a raised channelizing island. Secondary access for emergency vehicles will be provided by way of a 20-foot wide, gated connection to the access roadway that serves the Back River Wildlife Sanctuary and Reservation, and is accessed through the parking area for Lynch Field.

On-site parking is proposed for 310 vehicles for both residents and visitors consisting of both surface and garage parking, and includes 14 handicapped accessible spaces. The parking ratio provided is approximately 1.41 to 1.55 spaces per residential unit depending on the number of residential units that are proposed (220 vs. 200).

## **OCTOBER 2016 TRAFFIC IMPACT AND ACCESS STUDY**

### **General**

The Applicant's engineer provided a letter attesting that the October 2016 TIAS and the subsequent October 28, 2016 *Memorandum* were prepared under the direction of Mr. Robert L. Nagi, P.E. (MA P.E. No. 40483, Civil) and were completed in a professional manner and following the applicable standards of care.

## **Existing Conditions**

### **Study Area**

The study area evaluated for the Project consisted of Lincoln Street (Route 3A) and Beal Street, and the following 10 intersections:

1. Route 3A at Beal Street
2. Route 3A at HMS Essington Drive and Lincoln Plaza Drive
3. Route 3A at Sgt. William B. Terry Drive and Shipyard Drive West
4. Route 3A at Talbots Drive and Shipyard Drive East
5. Route 3A at Fottler Road and Bradley Woods Drive
6. Route 3A at Bulow Road
7. Beal Street at Lincoln Plaza
8. Beal Street at 230 Beal Street (Project site)
9. Beal Street at Sgt. William B. Terry Drive and the driveway to Lynch Field
10. Beal Street at Fottler Road and Tuckers Lane

**Comment:** *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 all major intersections located proximate to the Project site where the Project is expected to result in an increase in peak-hour traffic volumes by: i) five (5) percent or more; or ii) by more than 100 vehicles per hour.*

### **Traffic Volumes and Data Collection**

Traffic volumes were collected along Route 3A, Beal Street and Sgt. William B. Terry Drive within the study area over a continuous 96-hour period (Wednesday through Saturday) in May 2016 by means of an automatic traffic recorder, with manual turning movement counts and vehicle classification counts conducted at the study intersections during the weekday morning (7:00 to 9:00 AM), weekday evening (4:00 to 6:00 PM) and Saturday midday (10:30 AM to 1:30 PM) peak periods also in May 2016. A review of seasonal adjustment data available from MassDOT indicated that traffic volume conditions during the month of May are approximately 9.0 percent above average conditions and, as such, the raw traffic count data was not adjusted downward to average month conditions in order to provide a conservative (above average) analysis condition.

In addition, vehicle travel speeds were also measured along Beal Street and Sgt. William B. Terry Drive in conjunction with the automatic traffic recorder counts. These measurements indicated that the average measured 85<sup>th</sup> percentile travel speed (the speed at which 85 percent of the observed vehicles travelled at or below) was approximately 35 miles per hour (mph) on Beal Street, which is 5 mph above the “prima facie” speed limit<sup>1</sup> in the vicinity of the Project site (30 mph), and 32 mph along Sgt. William B. Terry Drive, which is 2 mph above the “prima facie” speed limit (30 mph).

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<sup>1</sup>The “prima facie” speed is defined in M.G.L. Chapter 90, Section 17, as the speed which would be deemed reasonable and proper to operate a motor vehicle given the nature of the abutting land use (thickly settled or business district).

**Comment:** *The data collection effort (traffic counts and vehicle travel speed measurements) and establishment of the seasonal adjustment 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**

An inventory of pedestrian facilities within the study area was presented with the intersection descriptions in the October 2016 TIAS. As noted therein, sidewalks are provided along the north side of Beal Street between Fottler Road and Route 3A and along the south side of Beal Street between Fottler Road and Squirrel Hill Lane; continuously along the north side of Route 3A and along the south side between Beal Street and Sgt. William B. Terry Drive; and along one or both sides of Sgt. William B. Terry Drive. The signalized intersections within the study area include pedestrian pushbuttons, signal indications and phasing where crosswalks are provided. Within the study area, marked crosswalks are also provided along Beal Street at Beal's Cove Road and Fottler Road. In the immediate proximity of the Project site, the closest crosswalks for crossing Beal Street are located at Sgt. William B. Terry Drive and are incorporated into the traffic signal system at the intersection.

**Comment:** *The description of existing pedestrian facilities within the study area is generally consistent with field observations and indicates that the existing transportation system provides opportunities to link the Project to the existing pedestrian infrastructure in order to encourage healthy transportation options for the residents of the Project.*

*The Applicant's engineer did not provide a description of bicycle facilities within the study area. Based on our review, we note that on-road bicycle accommodations along Route 3A within the study area are generally limited; however, the signalized intersections within the study area include bicycle detection. Off-road bicycle accommodations are afforded by way of shared use paths located within Bare Cove Park, the Back River Wildlife Sanctuary, the Stodders Neck recreation area and along the waterfront area in the northern portion of the Hingham Shipyard. In addition, Sgt. William B. Terry Drive and Beal Street provide sufficient width to support on-road bicycle travel in a shared travelled-way condition.<sup>2</sup> These accommodations serve to link the Project site to the Lincoln Plaza, the Hingham Shipyard, the shared-use paths within Bare Cove Park and the Back River Wildlife Sanctuary, and also afford bicycle access to the Massachusetts Bay Transportation Authority (MBTA) West Hingham Commuter Rail Station and MBTA bus and Commuter Boat services that are available in the Hingham Shipyard.*

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<sup>2</sup>A minimum combined travel lane and paved shoulder width of 14-feet is required to support bicycle travel in a shared travelled-way condition.

## **Public Transportation**

The October 2016 TIAS included a detailed description of public transportation services within the study area. The study area is served by public transportation services that are provided or managed by the MBTA. The MBTA provides bus service along Route 3A by way of the Route 220 bus, which provides service between Hingham Center and Quincy Center Station, where connections can be made to other MBTA bus lines and the Red Line subway system. The closest bus stops to the Project for the Route 220 bus are located at the Route 3A/Beal Street and Route 3A/Lincoln Plaza/HMS Essington Drive intersections, both of which are within a 3-5 minute walking distance of the Project site. In addition to the Route 220 bus, the MBTA provides ferry service from the Hingham Shipyard to Rowes Wharf in Boston and Commuter Rail service from West Hingham Station on the Greenbush Commuter Rail Line, which provides service to South Station in Boston. The Hingham Shipyard ferry terminal is located approximately 0.9 miles north of the Project site and West Hingham Station is located off Fort Hill Street approximately 1.5 miles south of the Project site.

## **Motor Vehicle Crash Summary**

Motor vehicle crash information was obtained for the study area intersections from MassDOT for the 5-year period 2009 through 2013, inclusive. Based on a review of this information, it was determined that there were a total of 74 motor vehicle crashes reported at the study area intersections over the 5-year review period, none of which resulted in a fatality, with all of the study intersections found to have a motor vehicle crash rate (average number of motor vehicle crashes reported per year per million vehicles travelling through an intersection) that was below the MassDOT average motor vehicle crash rate for a signalized or unsignalized intersection, as appropriate.

The Route 3A/Lincoln Plaza/HMS Essington Drive (21 crashes total) and Route 3A/Sgt. William B. Terry Drive/Shipyard Drive West (23 crashes total) intersections were found to have experienced the largest number of reported motor vehicle crashes, the majority of which occurred on a weekday, during off-peak commuter periods, on dry pavement, and involved rear-end type collisions that resulted in property damage only. In addition, the Applicant's engineer identified that one (1) crash involving a pedestrian/bicycle was reported at each of the aforementioned intersections, as well as at the Route 3A/Fottler Road/Bradley Woods Drive intersection.

Further, a review of the MassDOT statewide High Crash Location List indicated that there were no locations within the study area that were included in MassDOT's Highway Safety Improvement Program (HSIP) database.

**Comment:** *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. We note that crash data is currently available from MassDOT through 2014.*

## **Future Conditions**

### **No-Build Conditions**

Traffic volumes within the study area were projected to 2023, which represents a 7-year planning horizon from the existing conditions base year (2016) in accordance with MassDOT's *Transportation Impact Assessment (TIA) Guidelines*. The future condition traffic volume projections were developed by applying a background traffic growth rate to the 2016 Existing traffic volumes and then 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. A background traffic growth rate of 1.0 percent per year was established based on a review of historic traffic growth data available from MassDOT.

The Applicant's engineer consulted with the Town of Hingham in order 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 (1.0 percent per year). Based on these discussions, the continued build-out/occupancy of the Hingham Shipyard mixed-use development,<sup>3</sup> the so called "Selectmen's Parcel" development (up to 40 housing units to be located at 2 Beal Street) and the Avalon Hingham Shipyard II residential community (250 apartment units) were identified for inclusion in the future condition traffic volume projections. Traffic volumes associated with these projects were developed by the Applicant's engineer or were obtained from their respective traffic study, and incorporated into the future condition traffic volume projections.

In addition, the Applicant's engineer consulted with the Town of Hingham and MassDOT to identify planned roadway improvement projects within the study area that may impact traffic volumes and operating conditions at the study intersections. Based on these discussions, no transportation infrastructure improvements were identified to be planned within the study area at this time.

**Comment:** *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 (1.0 percent per year) and the inclusion of the identified specific development projects by others.*

***We note that the Applicant's engineer did not include a discussion of the planned roadway, intersection and traffic control improvements that were included in the Comprehensive Permit Decision that was issued for the Avalon Hingham Shipyard II project in this section of the report and, instead, listed the improvements in the "Mitigations & Conclusions" section. It is customary to reflect the mitigation commitments that are associated with a specific development proposal by others in the No-Build condition traffic volumes (to the extent that the mitigation alters traffic patterns) and analyses to correspond to the conditions that include the specific development proposal. This allows for the establishment of baseline traffic volumes and operating conditions on the future transportation infrastructure prior to the introduction***

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<sup>3</sup>At the time that the traffic counts that form the basis of the October 2016 TIAS were completed, approximately 16,000 square feet (sf) of retail space (5,000 sf constructed and vacant), 22,000 sf of office space and 83 residential condominiums were identified as being vacant or to be constructed.

*of Project-related traffic in order to determine if additional or modified improvements are required to accommodate the Project. That being said, we would expect that the extent of the additional improvements along the Route 3A corridor would be limited to the development of an optimal traffic signal timing, phasing and coordination plan.*

## **Build Conditions**

Future Build condition (with the Project) traffic volume projections were developed by the Applicant's engineer following standard Traffic Engineering and Transportation Planning practices. In order to determine the traffic characteristics of the Project, trip-generation methodologies established by the Institute of Transportation Engineers (ITE)<sup>4</sup> were used. The ITE provides trip-generation information for various types of land uses developed as a result of scientific studies that have been conducted over the past 50 plus years. This data includes trip estimates for land uses similar to those that are to be located within the Project site (residential apartments). ITE Land Use Code (LUC) 220, *Apartment*, was determined by the Applicant's engineer to be the most appropriate ITE land use classification to establish the base traffic characteristics of the Project.

In order to provide conservative (high) traffic volumes from which to assess the impact of the Project on the transportation infrastructure, the Applicant's engineer did not reduce the volume of traffic that is expected to be generated by the Project site to account for the removal of the existing uses that occupy the site or for the use of alternative modes of transportation to single-occupant vehicles (i.e., Route 220 bus, pedestrian or bicycle) by the residents of the Project.

The following table summarizes the trip-generation calculations for the Project as presented in the October 2016 TIAS (200 units) and in the October 28, 2016 supplemental memorandum (220 units) using the aforementioned methodology.

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<sup>4</sup>*Trip Generation*, 9<sup>th</sup> Edition; Institute of Transportation Engineers; Washington, DC; 2012.

**BROADSTONE BARE COVE PARK  
 TRAFFIC VOLUME PROJECTIONS<sup>a</sup>**

Time Period/Direction	Vehicle Trips		
	200 Units	220 Units	Difference
<i>Average Weekday Daily:</i>			
Entering	819	663	
<u>Exiting</u>	<u>819</u>	<u>663</u>	
Total	1,340	1,455	+115
<i>Weekday Morning Peak Hour:</i>			
Entering	20	20	
<u>Exiting</u>	<u>80</u>	<u>90</u>	
Total	100	110	+10
<i>Weekday Evening Peak Hour:</i>			
Entering	85	90	
<u>Exiting</u>	<u>45</u>	<u>50</u>	
Total	130	140	+10
<i>Saturday Midday Peak Hour:</i>			
Entering	50	55	
<u>Exiting</u>	<u>50</u>	<u>50</u>	
Total	100	105	+5

<sup>a</sup>Based on ITE LUC 220, *Apartment*.

Traffic volumes associated with the Project were assigned onto the study area roadway network based on: i) a review of Journey-to-Work data for persons residing within the Town of Hingham obtained from the 2010 U.S. Census; ii) existing travel patterns within the study area; and iii) trip patterns obtained from other recently completed traffic studies in the area. Based on this approach, the following trip assignments were developed by the Applicant's engineer for the Project:

**TRIP-DISTRIBUTION SUMMARY**

Roadway	Direction To/From	Trip Assignment (Percent)
Route 3A	East	25
Route 3A	West	55
Beal Street	South	<u>20</u>
TOTAL		100



**Comment:** *We are in agreement with the methodology that was used to develop the anticipated traffic characteristics of the Project (ITE data) and the trip distribution pattern (U.S. Census data, exiting traffic patterns and recent studies), and we concur with the resulting traffic volume projections and trip assignments. In addition, we concur with the Applicant's engineer that the increase in the development program from 200 units to 220 units will result in a minimal increase in the projected peak-hour traffic volumes associated with the Project (approximately 10 vehicle trips) and would not result in a material change in the overall findings that were presented in the October 2016 TIAS.*

### **Traffic Operations Analysis**

In order to assess the potential impact of the Project on the transportation infrastructure, a detailed traffic operations analysis was performed for the study intersections under 2016 Existing, 2023 No-Build and 2023 Build (with the Project) conditions. In brief, traffic operations are described by six "levels of service" which are defined by letter grades from "A" through "F", with a level-of-service (LOS) "A" representing the best operating conditions (average motorist delays of less than 10 seconds and little or no apparent vehicle queuing) and a LOS "F" representing constrained operating conditions (average motorist delays of 50 to 80 seconds or more and often with apparent vehicle queuing). A LOS of "E" is representative of an intersection or traffic movement that is operating at its design capacity, with a LOS of "D" typically representing the limit of acceptable traffic operations.

The Applicant's engineer noted the following with respect to operating conditions at the study intersections:

#### **Signalized Intersections:**

The signalized intersections within the study area were shown to operate at an overall LOS "D" or better during the peak hours under all analysis conditions, with no changes in LOS shown to occur as a result of the addition of Project-related traffic. Individual movements at specific intersections were reported to be operating at over capacity (defined as LOS "E" or "F", respectively) independent of the Project; however, Project-related impacts on these movements are predicted to be relatively minor (increase in average motorist delay of approximately six (6) seconds or less).

#### **Unsignalized Intersections:**

The addition of Project-related traffic to the unsignalized study area intersections was shown to result in a degradation in LOS at only one intersection, Beal Street at Fottler Road and Tuckers Lane, where the LOS for the Fottler Road approach was shown to degrade from LOS "D" to LOS "E" during the weekday morning peak-hour. In addition, the following intersections were identified to have one or more movements operating below LOS "D" independent of the Project:

- **Route 3A/Bulow Road** – Bulow Road approach was identified to operate at LOS "F" during the weekday morning and evening peak hours.
- **Beal Street/Fottler Road/Tuckers Lane** – Fottler Road approach was identified to operate at LOS "F" during the weekday evening and Saturday midday peak hours.

Project-related impacts on these specific movements were identified as an increase in vehicle queuing of less than two (2) vehicles.

With specific regard to the access to the Project site, all movements exiting the Project site (restricted to right turns only) were shown to operate at LOS “B” during the peak hours with predicted vehicle queues of approximately one (1) vehicle. All movements along Beal Street approaching the Project site driveway were shown to operate at LOS “A” with negligible vehicle queuing predicted.

In addition, a review of Project-related impacts on the North Street corridor and at the Beal Street/Beal’s Cove and Beal Street/Backriver Road intersections was also undertaken. This analysis indicated that the Project would add approximately 10 additional vehicle trips to the North Street corridor during the peak hours, a level of impact that would not be readily apparent over normal daily and seasonal traffic volume fluctuations. At the Beal Street intersections with Beal’s Cove and Backriver Road, it was noted that traffic volumes on both Beal’s Cove and Backriver Road are relatively minor and would not be impacted on a regular or sustained basis by the addition of Project-related traffic to the Beal Street corridor.

**Comment:** *The traffic operations analysis was completed using the appropriate methodologies and we are in agreement with the reported results and the overall conclusion that the addition of Project-related traffic to the study area roadways and intersections will not result in a significant impact (increase) on motorist delays or vehicle queuing over existing or anticipated future conditions without the Project (i.e., the “No-Build” condition).*

*As stated previously, it is surmised that inclusion of the committed transportation infrastructure improvements that are associated with the Avalon Hingham Shipyard II project in the traffic operations analyses would have indicated slightly improved operating conditions at the study area intersections from those that are reflected in the October 2016 TIAS, particularly along the Route 3A corridor.*

### **Sight Distance**

**Comment:** *An evaluation of sight distances at the Project site driveway intersection with Beal Street was not provided by the Applicant’s engineer and is necessary in order to demonstrate that safe access can be provided to the Project site. The measurements should be completed in accordance with American Association of State Highway and Transportation Officials (AASHTO)<sup>5</sup> standards and based on the measured 85<sup>th</sup> percentile vehicle travel speed along Beal Street (approximately 35 mph). In addition, the Applicant’s engineer should add the sight triangles for the Project site driveway to the Site Plans (discussion follows).*

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<sup>5</sup>A Policy on Geometric Design of Highway and Streets, 6th Edition; American Association of State Highway and Transportation Officials (AASHTO); Washington D.C.; 2011.

## **Recommendations**

The Applicant's engineer provided a summary of the mitigation commitments associated with the Avalon Hingham Shipyard II project that will be completed within the study area independent of the Project, and stated that the following additional improvements/transportation demand management strategies will be implemented in conjunction with the Project:

- **Beal Street/Fottler Road/Tuckers Lane** – Discuss with the Town of Hingham opportunities to improve traffic operations at this intersection.
- **Mobile Variable Message Signs** – Provide two (2) mobile variable message signs for use by the Town of Hingham Police Department for traffic, speed and parking control.
- **Transportation Demand Management (TDM)** – The Applicant has committed to the implementation of the following TDM measures as a part of the Project:
  - Post commuter information in and around common areas where tenants can ascertain if transit services are operating on-time and when they will arrive (bus, ferry and commuter rail)
  - Provide public transportation service maps, schedules and fare information in a central location
  - Provide 96 bicycle parking spaces and additional bicycle racks located proximate to main building entrances and other areas
  - Provide pedestrian and bicycle connections between the Project site and the nearby park and recreational facilities by way of a direct connection to the adjacent parklands and a formalized sidewalk along Beal Street.

**Comment:** *We are in agreement with the recommendations that have been provided by the Applicant's engineer and offer the following additional recommendations for consideration by the Applicant, some of which have been incorporated into the Site Plans for the Project:*

1. *Internal to the Project site, roadways and circulating aisles should be a minimum of 22-feet in width for two-way travel and a minimum of 20-feet in width for one-way travel, or as required to accommodate fire truck turning maneuvers pursuant to the requirements of NFPA® 1.<sup>6</sup>*
2. *Vehicles exiting the Project site should be placed under STOP-sign control with a marked STOP-line provided.*
3. *Where perpendicular parking is proposed, the travel aisle adjacent to the parking shall be a minimum of 23-feet in width in order to accommodate parking maneuvers.*
4. *Fire lanes and/or emergency vehicle access roads should be a minimum of 20-feet in width as required pursuant to NFPA® 1.*

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<sup>6</sup>National Fire Protection Association (NFPA)® 1, Fire Code, Seventh Edition; NFPA; Quincy, Massachusetts; 2015; as amended per 527 CMR.

5. *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).<sup>7</sup> This note should be added to the Site Plans.*
6. *Snow windrows within the sight triangle areas of the Project site driveway shall be promptly removed where such accumulations would exceed 2.5-feet in height.*
7. *Weather protected bicycle storage should be provided in secure areas within the parking garage of each building.*
8. *Beal Street/Fottler Road/Tuckers Lane – The Applicant should commit to evaluating alternative improvement plans for the intersection. It is envisioned that this evaluation would include an assessment at a conceptual level of reconfiguring the intersection as a modern roundabout or the implementation of other traffic control measures that are appropriate for the context of the intersection. The results of this evaluation would be summarized in a technical memorandum that would be provided to the Town and include conceptual plans illustrating the alternatives that were evaluated, the resulting traffic operations and the associated cost (preliminary) to implement the improvement measure.*
9. *Route 3A/Beal Street – The Applicant should evaluate alternatives to reduce the width of the right-turn slip-ramp from Route 3A eastbound to Beal Street in order to reduce the speed of vehicles transitioning from Route 3A to Beal Street. Alternatively, this evaluation could include the introduction of a raised median along Beal Street between Route 3A and Sgt. William B. Terry Drive that would be similar to the landscaped median that has been constructed south of Sgt. William B. Terry Drive.*
10. *TDM Program – consider adding the following:*
  - *Residents will be encourage to participate in MassRIDES’ NuRide program, which rewards individuals that choose to walk, bicycle, carpool, vanpool or that use public transportation to travel to and from work.*
  - *Residents will be made aware of the Emergency Ride Home (ERH) program available through MassRIDES, which reimburses employees of a participating MassRIDES employer partner worksite that is registered for ERH and that carpool, take transit, bicycle, walk or vanpool to work.*
  - *A mail drop should be provided at a central location.*

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<sup>7</sup>Manual on Uniform Traffic Control Devices (MUTCD); Federal Highway Administration; Washington, DC; 2009.

## **SITE PLANS**

The following comments are offered with respect to our review of the *Comprehensive Permit Application Plans* prepared by Allen & Major Associates, Inc. and dated August 12, 2016, last revised October 25, 2016 (hereafter referred to as the “*Site Plans*”), and are in addition to the suggested recommendations outlined above for the October 2016 TIAS that relate to the *Site Plans*.

- 1. The Applicant’s engineer provided a truck turning analysis for the Town of Hingham Fire Department design vehicle (tower truck). The turning analysis demonstrated that the subject vehicle can access and circulate within the Project site in an unimpeded manner; however, we note that the fire truck would need to back-up to exit the drive aisle along the east side of Building 1. A review of this maneuver indicates that the distance exceeds 150-feet and would require that an approved turnaround area be provided in accordance with NFPA® 1. This area should be added to the Site Plans and a revised turning analysis provided.***
- 2. The Applicant’s engineer should provide a turning analysis for an SU-30/40 (small delivery/moving vehicle and trash/recycling vehicle) that demonstrates that the subject vehicle can access and stage in the loading areas without blocking internal circulation. In addition, the analysis should also demonstrate the location and maneuvering required to serve the trash/recycling area.***
- 3. It is not clear from the Site Plans if a crosswalk is proposed for crossing Beal Street at the Project site driveway; a wheelchair ramp is shown on the southeast corner. If a crossing is to be provided, the Applicant’s engineer should verify that the necessary lines of sight are provided and the design should include curblines extensions (bump-outs) or a raised median (discussion follows), ADA compliant wheelchair ramps on both sides of the crossing and pedestrian crossing warning signs at and in advance of the crossing.***
- 4. Consideration should be given to providing a sidewalk along the south side of Beal Street between the Project site driveway and the driveway to the Back River Wildlife Sanctuary.***
- 5. The corner radius for vehicles exiting the Project site should be redesigned as a compound curve and the raised channelizing island extended parallel to and off-set from the edge of the travelled-way on Beal Street in order to reinforce the left-turn restriction while continuing to accommodate fire truck egress. Further, a raised median should be installed along Beal Street extending from the Project site driveway southerly to Sgt. William B. Terry Drive in order to eliminate the potential for U-turn maneuvers along this segment of Beal Street and to reduce travel speeds approaching the Project site driveway. The raised median should be designed and constructed so as to be consistent with the raised median that exists to the south of Sgt. William B. Terry Drive (width and plantings).***
- 6. A “No Left-Turn” sign (graphic symbol) should be installed on Beal Street facing motorists exiting the Project site.***
- 7. A school bus waiting area should be provided within the Project site or at an appropriate location defined in consultation with the Town of Hingham School Department.***

8. *The circular drive along the front of Building 2 should be redesigned to increase the width of the travelled-way to 24-feet or the parking should be changed to angle parking to correspond to the one-way direction of travel in order to provide sufficient maneuvering area for vehicles to access the adjacent parking spaces.*
9. *The sight triangle areas for the Project site driveway intersection with Beal Street should be added to the Site Plans along with a note to indicate: "Signs, landscaping and other features located within the sight triangle areas shall be designed, installed and maintained so as not to exceed 2.5-feet in height. Snow windrows located within the sight triangle areas that exceed 2.5-feet in height or that would otherwise inhibit sight lines shall be promptly removed."*
10. *A tenant move in/out management plan (narrative) should be provided and reflected in the truck turning analysis for the Project.*
11. *A narrative should be provided describing how trash and recycling will be collected and then picked-up by the contracted hauler.*
12. *The Applicant should consider incorporating electric vehicle charging stations into the Project.*

## **PARKING**

The Project will provide parking for 310 vehicles for both residents and visitors consisting of both surface and garage parking, and includes 14 handicapped accessible spaces, or a parking ratio of 1.55 spaces per residential unit at 200 units and 1.41 spaces at 220 units. Pursuant to Section V-A, *Off-Street Parking Requirements* of the Hingham Zoning By-Law, the Project is required to provide two (2) off-street parking spaces per dwelling unit, or 400 spaces for 200 residential units and 440 spaces for 220 residential units.

***Comment: The Applicant's engineer should provide parking demand observations from residential apartment communities in a similar setting with comparable access to public transportation services in order to support the requested waiver from the Zoning By-Law. We note that the parking ratio that is proposed is within the range of values documented by the Institute of Transportation Engineers (ITE)<sup>8</sup> for an apartment community in a suburban setting.***

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<sup>8</sup>*Parking Generation*, 4<sup>th</sup> Edition; Institute of Transportation Engineers; Washington, D.C.; 2010. Observed parking demand ratios for an apartment community were found to range from 0.59 to 1.94 spaces per dwelling unit, with an average parking demand of 1.23 spaces per dwelling unit and an 85<sup>th</sup> percentile peak parking demand of 1.94 spaces per dwelling unit.

## SUMMARY

VAI has completed a review of the materials submitted on behalf of Broadstone Bare Cove Alliance, LLC in support of the proposed Broadstone Bare Cove residential development to be located at 230 Beal Street in Hingham, 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) Town Zoning requirements as they relate to access, parking and circulation; and iv) accepted Traffic Engineering and Transportation Planning practices.

Based on our review of the information submitted in support of the Project, 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 engineer provide sight distance measurements for the Project site driveway and additional information to substantiate the adequacy of the parking supply that will be provided for the Project. In addition, we have provided specific comments on the *Site Plans* that should be reviewed by the Applicant's engineer with regard to: i) access design and internal circulation; ii) moving/trash/recycling vehicle access and management; iii) parking layout; and iv) fire truck access and maneuvering. Written responses to our comments should be provided so that we may continue our review of the Project on behalf of the Town.

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 & ASSOCIATES, INC.



Jeffrey S. Dirk, P.E., PTOE, FITE  
Principal

JSD/jsd

cc: File