

Ref: 7226

March 10, 2016

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

Re: Traffic Engineering Peer Review  
Avalon Hingham Shipyard II – 319 Lincoln Street  
Hingham, Massachusetts

Dear Emily:

Vanasse & Associates, Inc. (VAI) has completed a review of the materials submitted on behalf of Hingham Shipyard Avalon II Inc. (the “Applicant”) in support of the proposed Avalon Hingham Shipyard II residential community to be located at 319 Lincoln 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*, Avalon Hingham Shipyard II; Howard Stein Hudson; February 25, 2016; and
2. *Comprehensive Permit Application (Site Plans)*, Avalon Hingham Shipyard II, 319 Lincoln Street, Hingham, MA; Howard Stein Hudson and Cube 3 Studio; February 12, 2016, last revised February 25, 2016.

In addition, VAI conducted a site visit in order validate the existing conditions context of the Project and the study area that was assessed in the February 25, 2016 *Traffic Impact and Access Study* (the “February 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 additional information to substantiate the adequacy of the parking supply that will be provide for the Project and that specific elements of the transportation improvement program be refined and expanded. In addition, we have provided specific comments on the *Site Plans* that should be reviewed by the Applicant’s engineer with regard to: i) pedestrian and bicycle

accommodations; ii) moving/trash/recycling vehicle access and maneuverability; iii) parking layout and accommodations; and iv) sign and pavement marking details.

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 demolition of the former Building #19 Warehouse and associated corporate office space located at 319 Lincoln Street in Hingham, Massachusetts, and the construction of 250-unit residential apartment community to be known as Avalon Hingham Shipyard II. The Project will consist of a single six story apartment building with an internal fitness center and supporting amenities. The Project site encompasses approximately 3.76± acres of land bounded by the Avalon Hingham Shipyard residential community to the north; Lincoln Street, a commercial property (Meara Image Auto Detail) and a parking lot/boat storage area to the south; USS Amesbury Drive to the east; and the Bright Horizons at the Hingham Shipyard daycare center to the east. Access to the Project site will be provided by way of two (2) driveways that will intersect the west side of USS Amesbury Drive and an access roadway that will bound the northern side of the Project site and extend between USS Amesbury Drive and Shipyard Drive East. Access to USS Amesbury Drive to/from Lincoln Street will continue to be limited to right turn movements only.

On-site parking is proposed for 390 vehicles consisting of a surface parking lot that will encompass 52 spaces, including 4 handicapped accessible spaces, and 338 spaces that will be located on the ground floor of the residential building and will including 4 handicapped accessible spaces. The surface parking lot will primarily serve visitors and prospective tenants. The parking ratio provided is approximately 1.56 spaces per residential unit.

## **FEBRUARY 25, 2016 TRAFFIC IMPACT AND ACCESS STUDY**

### **General**

The Applicant's engineer provided a letter attesting that the February 2016 TIAS was prepared under the direction of Mr. Joseph L. SanClemente, P.E. (MA P.E. No. 47358, Civil) and was 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 nine (9) intersections:

- Route 3A at HMS Essington Drive and Lincoln Plaza Drive
- Route 3A at Sgt. William B. Terry Drive and Shipyard Drive West

- Route 3A at Talbots Drive and Shipyard Drive East
- Route 3A at USS Amesbury Drive
- Route 3A at Fottler Road and Bradley Woods Drive
- Route 3A at Downer Avenue, Thaxter Street and Lincoln Street
- Beal Street at Sgt. William B. Terry Drive and the driveway to Lynch Field
- Beal Street at Fottler Road and Tuckers Lane
- Shipyard Drive East at HMS Essington Drive and a private drive

**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 Shipyard Drive East within the study area over a continuous 72-hour period (Thursday through Saturday) in January 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 peak periods in January 2016. A supplemental 48-hour automatic traffic recorder count (Wednesday through Thursday) was conducted on Route 3A in the vicinity of the Project site in February 2016. A review of seasonal adjustment data available from MassDOT indicated that traffic volume conditions during the month of January are approximately 3.0 percent below average conditions. As such, the January traffic volumes were adjusted upward by 3.0 percent to represent traffic volumes under average-month conditions within the study area.

In addition, vehicle travel speeds were also measured along Route 3A, Beal Street and Shipyard Drive East 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 42 miles per hour (mph) on Route 3A, which is above the posted speed limit in the vicinity of the Project site (35 mph/40 mph), approximately 39 mph on Beal Street, which is 9 mph above the posted speed limit (30 mph), and 25 mph along Shipyard Drive East, which is 5 mph below the posted speed limit (30 mph).

**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.*

***The Applicant's engineer should provide back-up data for the establishment of the composite peak-hour for the study area to include the raw (unadjusted) traffic volume networks and the basis for the peak-hour selected for each time period (weekday morning, weekday evening and Saturday midday).***

## **Pedestrian and Bicycle Facilities**

An inventory of pedestrian and bicycle facilities within the study area was presented in the February 2016 TIAS. As noted therein, a sidewalk is provided continuously along the north side of Route 3A within the study area, along both sides of Shipyard Drive, along the east side of U.S.S. Amesbury Drive, along the north side of Beal Street, and along one or both sides of the remaining study area roadways with the exception of Fottler Road. The signalized intersections within the study area include pedestrian pushbuttons, signal indications and phasing where crosswalks are provided. In the immediate proximity of the Project site, crosswalks are provided across USS Amesbury Drive at its intersection with Route 3A and across the south leg of Shipyard Drive East and the private drive opposite HMS Essington Drive at the Shipyard Drive East/HMS Essington Drive intersection.

The Applicant's engineer noted that on-road bicycle accommodations 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 Stodders Neck recreation area and along the waterfront area in the northern portion of the Hingham Shipyard. It was also noted that bicycle racks are located throughout the Hingham Shipyard.

***Comment:** The description of existing pedestrian and bicycle facilities within the study area is generally consistent with field observations and indicates that the existing transportation system provides opportunities for pedestrian and bicycle access to the Project site.*

***We note that Sgt. William B. Terry Drive and Beal Street provide sufficient width to support on-road bicycle travel in a shared travelled-way condition.<sup>1</sup> These accommodations link the Hingham Shipyard to the shared-use path within Bare Cove Park and also afford bicycle access to the West Hingham Commuter Rail Station.***

## **Public Transportation**

The Applicant's engineer provided a detailed description of public transportation services within the study area. The study area and the Project site are served by public transportation services that are provided or managed by the Massachusetts Bay Transportation Authority (MBTA). The MBTA provides bus service along Route 3A and to the Hingham Shipyard by way of the Route 220 bus, which provides service between Quincy Center Station, where connections can be made to other MBTA bus lines and the Red Line subway system, and Hingham Center. MBTA ferry service is provided from the Hingham Shipyard to Rowes Wharf in Boston. The bus stop for the Route 220 bus and the Hingham Shipyard ferry terminal are located within a reasonable walking distance of the Project site. In addition, the MBTA provides Commuter Rail service to the area by way of West Hingham Station on the Greenbush Commuter Rail Line, which provides service to South Station in Boston. West Hingham Station is located off Fort Hill Street approximately 1.5 miles south of the Project site.

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<sup>1</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.

## **Motor Vehicle Crash Summary**

Motor vehicle crash information was obtained for the study area intersections from MassDOT and the Town of Hingham Police Department for the most recent 3-year period available (2011 through 2013, inclusive). Based on a review of this information, it was determined that there were a total of 105 motor vehicle crashes reported at the study area intersections over the 3-year review period, none of which resulted in a fatality. With the exception of the Route 3A/Downer Avenue/Thaxter Street/Lincoln Street intersection, the study intersections were 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.

A total of 57 motor vehicle crashes were reported to have occurred at the Route 3A/Downer Avenue/Thaxter Street/Lincoln Street intersection over the 3-year review period, or more than one-half of the total number crashes reported at the study area intersections. In addition, the motor vehicle crash rate at the intersection was found to be more than twice the MassDOT average for a signalized intersection, and the intersection was classified by MassDOT as a Highway Safety Improvement Program (HSIP) eligible Crash Cluster location. The Applicant's engineer identified that the majority of the crashes occurring at the intersection involved angle or rear-end type collisions, with the majority of the angle crashes involving motorists turning left from Route 3A eastbound to Crow Point Lane or one of the adjacent commercial driveways along the north side of Route 3A.

***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.*

## **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>2</sup> and

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<sup>2</sup>At the time that the traffic counts that form the basis of the February 2016 TIAS were completed, approximately 4,000 square feet (sf) of retail space, 22,000 sf of office space and 83 residential condominiums were identified as being vacant or to be constructed.

the potential development of the Selectmen's Parcel (up to 40 housing units to be located at 2 Beal Street) were identified for inclusion in the future condition traffic volume projections. Traffic volumes associated with these projects were developed by the Applicant's engineer 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. An intermodal center is currently being constructed at 45 Shipyard Drive that will serve as a transportation hub for MBTA bus and ferry services, and will provide office space for the MBTA, the Department of Conservation and Recreation (DCR), the Massachusetts Environmental Police and Harbor Island Cruises. It was also noted that the roadway, intersection and traffic control improvements that were associate with the Hingham Shipyard redevelopment project have been completed. No other 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 and the inclusion of the identified specific roadway and development projects by others.*

## **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>3</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.

Given the availability of public transportation services to the Project site and within the study area, including bus, ferry and Commuter Rail service operated/managed by the MBTA, and the extensive and interconnected sidewalk infrastructure, the Applicant's engineer adjusted the base ITE trip projections to account for the use of alternative modes of transportation to the use of private automobiles. The Applicant's engineer reviewed data from the 2010-2014 American Community Survey for the U.S. Census Tract in which the Project site is located. Based on a review of this data and with adjustment to account for the proximity of ferry service to the Project site and the need to travel by automobile to access Commuter Rail, the Applicant's engineer assumed that approximately 17 percent of Project-related trips on a weekday would be made using public transportation, 2 percent would be made by walking/bicycling, and 81 percent would be made using a private automobile; on a weekend, all trips were assumed to be made by private automobile. The following table summarizes the trip-generation calculations for the Project obtained using the aforementioned methodology.

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<sup>3</sup>*Trip Generation*, 9<sup>th</sup> Edition; Institute of Transportation Engineers; Washington, DC; 2012.

**AVALON HINGHAM SHIPYARD II  
 TRAFFIC VOLUME PROJECTIONS**

Time Period/Direction	Base ITE Trip Projections (250 Units) <sup>a</sup>	Vehicle Trips	Transit Trips	Pedestrian/ Bicycle Trips
<i>Average Weekday Daily:</i>				
Entering	819	663	157	19
<u>Exiting</u>	<u>819</u>	<u>663</u>	<u>157</u>	<u>19</u>
Total	1,638	1,326	314	38
<i>Weekday Morning Peak Hour:</i>				
Entering	25	20	5	1
<u>Exiting</u>	<u>101</u>	<u>82</u>	<u>19</u>	<u>2</u>
Total	126	102	24	3
<i>Weekday Evening Peak Hour:</i>				
Entering	101	82	19	2
<u>Exiting</u>	<u>54</u>	<u>44</u>	<u>10</u>	<u>1</u>
Total	155	126	29	3
<i>Saturday:</i>				
Entering	853	853	0	0
<u>Exiting</u>	<u>853</u>	<u>853</u>	<u>0</u>	<u>0</u>
Total	1,706	1,706	0	0
<i>Saturday Midday Peak Hour:</i>				
Entering	66	66	0	0
<u>Exiting</u>	<u>56</u>	<u>56</u>	<u>0</u>	<u>0</u>
Total	122	122	0	0

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

The traffic volumes associated with the Project were assigned onto the study area roadway network based on a review of Journey-to-Work data for persons residing within the Town of Hingham obtained from the U.S. Census and then refined based on existing travel patterns within the study area. In addition, Project-related trips that were assumed to use Commuter Rail were routed to/from West Station. 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	10
Route 3A	West	60
Fottler Road/Beal Street	South	12
Lincoln Street	East	15
Thaxter Street	South	<u>3</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 adjusted U.S. Census Data for mode share) and the trip distribution pattern (U.S. Census data and exiting traffic patterns), and we concur with the resulting traffic volume projections and trip assignments.*

### 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 60 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:**

With the exception of the Route 3A/Downer Avenue/Thaxter Street/Lincoln Street intersection, 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 specific movements reported to be operating at over capacity (defined as LOS “E” or “F”, respectively) independent of the Project. The Route 3A/Downer Avenue/Thaxter Street/Lincoln Street intersection was shown to operate at an overall LOS “E” or “F” during the weekday peak hours independent of the Project. Project-related impacts at the signalized study area intersections were defined as an increase in overall delay of approximately three (3) seconds or less, with vehicle queue increases of approximately two (2) or fewer vehicles.



### **Unsignalized Intersections:**

Critical movements at the unsignalized intersections within the study area were shown to generally operate at LOS “D” or better during the weekday morning and Saturday midday peak-hours under all analysis conditions. During the weekday evening peak-hour, vehicles exiting the private driveway located opposite USS Amesbury Drive (Ocean Kai Restaurant/Wash n’ Dry Laundromat) and all movements from Fottler Road were shown to operate under constrained conditions (LOS “F”) due to the relatively large volume of conflicting traffic during this period independent of the Project. Project-related impacts at the unsignalized study area intersections were defined as an increase in vehicle queuing of approximately one (1) vehicle.

With specific regard to the access to the Project site, all movements exiting USS Amesbury Drive (restricted to right turns only) and the private way opposite HMS Essington Drive (connection between USS Amesbury Drive and Shipyard Drive East) were shown to operate at LOS “D” or better during the peak hours with predicted vehicle queues of less than two (2) vehicles. In addition, a review of vehicle queuing on the Shipyard Dive East approach to Route 3A indicates that the predicted vehicle queue from the traffic signal does not extend to the point that it would inhibit the ability of vehicles to enter or exit the private way.

**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).*

*We note that vehicle queues on the Shipyard Drive East approach to Route 3A during the weekday evening peak-hour may exceed the distances predicted in the February 2016 TIAS during those distinct periods after the arrival of the commuter ferry; however, it is important to consider that during these periods, the majority of traffic associated with the Project will be entering Shipyard Drive East and will not be impacted by the surge in exiting traffic.*

### **Sight Distance**

An evaluation of sight distances at the intersections of Route 3A at USS Amesbury Drive and Beal Street at Fottler Road and Tuckers Lane was conducted by the Applicant’s engineer in accordance with American Association of State Highway and Transportation Officials (AASHTO)<sup>4</sup> standards. Based on these measurements, the Applicant’s engineer noted the following:

**Route 3A/USS Amesbury Drive** – Lines of sight looking to/from the east (westbound) along Route 3A (left turns from USS Amesbury Drive are prohibited) were found to be approximately 308 feet, where a minimum sight line of 250 feet is required for safe operation based on the posted speed of 35 mph and 327 feet is required based on the actual measured prevailing speed of traffic approaching USS Amesbury

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<sup>4</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.

Drive (42 mph). The limiting factor was noted to be the presence of trees and vegetation located within the public right-of-way along the north side of Route 3A to the east of USS Amesbury Drive.

**Beal Street/Fottler Road/Tuckers Lane** – Lines of sight looking to/from the east (westbound) along Beal Street from Fottler Road were found to be approximately 252 feet, where a minimum sight line of 200 feet is required for safe operation based on the posted speed of 30 mph and 294 feet is required based on the actual measured prevailing speed of traffic approaching the intersection (39 mph). Sight lines for the remaining approaches were found to meet or exceed the required minimum distance for safe operation (294 feet). The limiting factor was noted to be the presence of a rock outcropping, trees and vegetation, and the horizontal curvature of Beal Street to the east of the intersection.

The Applicant's engineer has proposed specific improvements at both intersections that are designed to improve lines of sight (discussion follows).

**Comment:** *We are in agreement that sight lines looking to/from the east at the Route 3A/ USS Amesbury Drive and Beal Street/Fottler Road/Tuckers Lane intersections do not currently meet the required minimum distances for safe operation based on the measured prevailing speed of traffic approaching the intersections. The Applicant has provided specific recommendations to address the sight line deficiencies that will be implemented in conjunction with the Project and are discussed later in this review.*

*We recommend that any approvals that may be granted for the Project include a condition that that all signs and landscape features that are to be installed as a part of the Project within the sight triangle areas of the Project site driveways and at the Route 3A/USS Amesbury Drive intersection be designed and located so as not to impede lines of sight. Such features should not exceed 2-feet in height as measured from the surface elevation of the Project site driveways or USS Amesbury Drive. In addition, the Applicant should be required to selectively trim/remove vegetation along the Project site frontage and Route 3A within the public right-of-way where necessary in order to enhance sight lines to and from the Project site driveways and USS Amesbury Drive.*

## **Recommendations**

The Applicant's engineer provided a series of recommendations to address the sight distance limitations noted at the Route 3A/USS Amesbury Drive and Beal Street/Fottler Road/Tuckers Lane intersections; traffic operations along the Route 3A corridor; safety; and trip-reduction measures; that included the following specific recommendations:

- **Route 3A Corridor Signal Coordination and Optimization** – The Applicant's engineer noted during their field observations that the traffic signal system along the Route 3A corridor between the Lincoln Plaza Driveway and Fottler Road was not operating in a coordinated manner which resulted in inefficient traffic flow along the corridor. In order to improve operating conditions along the corridor and reduce both motorist delay and overall travel times, the Applicant has committed to repair or replace the master traffic signal controller and to restore operation of the coordinated traffic signal system, including designing and implementing an optimal traffic signal timing and phasing based on current traffic volumes and flow patterns. In addition, the

improvements will include updating the pedestrian crossing times and vehicle clearance intervals (yellow and all-red time) to reflect current design standards and travel speeds along the corridor.

- **Route 3A/Fottler Road/Bradley Woods Drive Intersection Improvements** – In order to improve traffic operations and safety at this intersection, the Applicant has committed to the implementation of sign and pavement marking improvements; replacement of pedestrian traffic signal equipment to meet current Americans with Disabilities Act (ADA) standards; reconstruction of wheelchair ramps; and the design and implementation of an optimal traffic signal timing and phasing plan to include updated the pedestrian crossing times and vehicle clearance intervals.
- **Route 3A/Downer Avenue/Thaxter Street/Lincoln Street Safety Improvements** – In order to improve safety at this intersection, the Applicant has committed to implement the following improvements: prohibit left-turn movements from the Route 3A westbound approach, including the installation of all necessary signs and traffic signal equipment; replace the Route 3A westbound signal indications with optically programmed indications so as to limit their visibility to motorists on the Lincoln Street approach; and the design and implementation of an optimal traffic signal timing and phasing plan to include updated the pedestrian crossing times and vehicle clearance intervals.
- **Route 3A/USS Amesbury Drive Sight Distance Improvements** – In order to improve lines of sight at this intersection, the Applicant has committed to trimming trees and vegetation located along the north side of Route 3A east of USS Amesbury Drive and within the public right-of-way; enhance the pavement markings around the raised island at the center of USS Amesbury Drive to improve channelization of exiting vehicles to right turns only; installation of “No Left Turn” signs (graphic symbol) on Route 3A to reinforce the left-turn restriction; and replacement of the stop-line and crosswalk markings on USS Amesbury Drive.
- **Beal Street/Fottler Road Sight Distance Improvements** - In order to improve lines of sight at this intersection, the Applicant has committed to the following improvements: installation of radar speed signs on the Beal Street approaches (both directions) to reinforce the posted speed limit and to allow for targeted enforcement by police; installation of “30 MPH” pavement markings on Beal Street to supplement the speed limit signs; relocate the stop-line on the Fottler Road approach closer to Beal Street and extend the adjacent raised islands to afford improved sight lines from Fottler Road; and enhancing signs and pavement markings at and approaching the intersection to include reducing the width of the Beal Street westbound travel lane to 11-feet.
- **Shipyards Drive East/HMS Essington Drive Pedestrian Access Improvements** – In order to improve pedestrian access and safety at this intersection, the Applicant has committed to the following improvements: reducing the width of the channelized right-turn lane on the HMS Essington Drive eastbound approach to one (1) travel lane; increasing the area of the raised triangular island to reduce pedestrian crossing distances and to provide a pedestrian refuge area; and realignment and replacement of the crosswalk pavement markings to include the installation of pedestrian crossing warning signs.

- **Transportation Demand Management (TDM)** – The Applicant has committed to the implementation of the following TDM measures as a part of the Project:
  - Designate a transportation coordinator to manage all transportation issues associated with the Project to include parking, service, loading and tenant moves.
  - Provide tenant and resident orientation packets to promote use of available public transportation alternatives.
  - Providing secure, weather protected bicycle storage for 25 bicycles within the parking garage.

**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:*

- 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 16-feet in width for one-way travel or where two-way traffic is separated by a raised island (16-foot travel lanes on either side of a raised median or island).*
- 2. Where perpendicular parking is proposed, the travel isle adjacent to the parking shall be a minimum of 23-feet in width in order to accommodate parking maneuvers.*
- 3. Fire lanes and/or emergency vehicle access roads should be a minimum of 20-feet in width.*
- 4. 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>5</sup> This note should be added to the Site Plans.*
- 5. Snow windrows within the sight triangle areas of the Project site driveways and at the intersection of Route 3A at USS Amesbury Drive shall be promptly removed where such accumulations would exceed 2-feet in height.*
- 6. Route 3A/Fottler Road/Bradley Woods Drive – replace crosswalk and stop-line pavement markings.*
- 7. Route 3A/Downer Avenue/Thaxter Street/Lincoln Street – Facilitate and fund the preparation of a Roadway Safety Audit (RSA) which will likely be required by MassDOT before considering the implementation of safety-related improvements at the intersection. The RSA should be completed prior to implementation of specific improvements at the intersection.*
- 8. Route 3A/USS Amesbury Drive – Expand the channelizing island through a combination of increasing the width (area) of the curbed island where not precluded by truck maneuvering and serrated concrete where truck off-tracking will occur. The combination of these features and the associated edgeline pavement markings should reduce the width of the entering and exiting travel lane to no more than 16-feet and provide for improved channelization to reinforce the left-turn restriction. In addition, a “Right Turn Only” sign should be installed on USS Amesbury Drive approaching Route 3A.*

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<sup>5</sup>Manual on Uniform Traffic Control Devices (MUTCD); Federal Highway Administration; Washington, DC; 2009.

9. *Beal Street/Fottler Road – Install intersection ahead warning signs (graphic symbol) on Beal Street approaching the intersection and selectively trim trees and vegetation along the north side of Beal Street east of Fottler Road.*
10. *Shipyards Drive East/HMS Essington Drive – Reconstruct/replace/install wheelchair ramps as necessary.*
11. *TDM Program – consider adding the following:*
  - *Information regarding public transportation services, maps, schedules and fare information will be posted in a central location*
  - *Residents will be encouraged 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.*

## **SITE PLANS**

The following comments are offered with respect to our review of the *Comprehensive Permit Application* (Site Plans) prepared by Howard Stein Hudson and Cube 3 Studio and dated February 12, 2016, last revised February 25, 2016 (hereafter referred to as the “*Site Plans*”), and are in addition to the suggested recommendations outlined above for the February 2016 TIAS that relate to the *Site Plan*.

1. *The Applicant’s engineer provided a truck turning analysis for the Town of Hingham Fire Department design vehicle (tower truck) and an intermediate size tractor semi-trailer combination (WB-50). The turning analysis demonstrated that the subject vehicles 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 visitor parking area. The Applicant’s engineer should also 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 the garage access points. In addition, the analysis should also demonstrate the location and maneuvering required to serve the trash/recycling area.*
2. *“No Parking Any Time” signs with a supplemental “Tow Away Zone” should be added along both sides of the fire lane. “No Parking Loading Zone” signs should be installed within the designated loading areas.*
3. *The proposed sidewalk should be extended along the north side of the building to the stair/lobby area and should include ADA compliant wheelchair ramps at the pedestrian crossings of the driveways to the parking garage.*
4. *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.*

5. *An exterior bicycle rack(s) should be provided proximate to the entrance to the fitness center/management office.*
6. *A sign and pavement marking plan should be provided as a part of the Site Plans in order to verify that the proposed traffic control devices are appropriately designed and located within the Project site.*
7. *The sight triangle areas for the Project site driveway intersections with USS Amesbury Drive and at the intersection of Route 3A at USS Amesbury Drive 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-feet in height. Snow windrows located within the sight triangle areas that exceed 2-feet in height or that would otherwise inhibit sight lines shall be promptly removed."*
8. *A tenant move in/out management plan (narrative) should be provided and reflected in the truck turning analysis for the Project.*
9. *A narrative should be provided describing how trash and recycling will be collected within the building and then picked-up by the contracted hauler.*
10. *The Applicant should consider incorporating electric vehicle charging stations into the Project and coordinating with ZipCar to locate vehicles at the Project site.*

## **PARKING**

The Project will provide parking for 390 vehicles consisting of a surface parking lot that will encompass 52 spaces and 338 spaces that will be located on the ground floor of the residential building, or a parking ratio of approximately 1.56 spaces per residential unit. Pursuant to Town Zoning requirements, the Project is required to provide two (2) off-street parking spaces per dwelling unit, or 500 spaces for 250 residential units. The Applicant's engineer cited parking demand data from the adjacent Avalon Hingham Shipyard residential community that indicated that the existing residential community had a parking demand ratio of 1.44 spaces per residential unit inclusive of guest parking, with a 95 percent occupancy level (i.e., 95 percent of the available parking spaces were occupied during the peak parking demand period).

***Comment:*** *The Applicant's engineer should provide the parking demand observations from the adjacent Avalon Hingham Shipyard residential community. The observations should be provided for both a weekday and a Saturday between 6 AM and 9 PM. We note that the parking ratio that is proposed is within the range of values documented by the Institute of Transportation Engineers (ITE)<sup>6</sup> for an apartment community with a similar level of access to public transportation services.*

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<sup>6</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 Hingham Shipyard Avalon II Inc. in support of the proposed Avalon Hingham Shipyard II residential community to be located at 319 Lincoln 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 additional information to substantiate the adequacy of the parking supply that will be provide for the Project and that specific elements of the transportation improvement program be refined and expanded. In addition, we have provided specific comments on the *Site Plans* that should be reviewed by the Applicant's engineer with regard to: i) pedestrian and bicycle accommodations; ii) moving/trash/recycling vehicle access and maneuverability; iii) parking layout and accommodations; and iv) sign and pavement marking details. 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