

Ref: 7198

March 3, 2016

Ms. Jody Kablack  
Director of Planning and Community Development  
Town of Sudbury  
278 Old Sudbury Road  
Sudbury, MA 01776

Re: Traffic Engineering Peer Review  
The Village at Sudbury Station – 30 Hudson Road  
Sudbury, Massachusetts

Dear Jody:

Vanasse & Associates, Inc. (VAI) has completed a review of the materials submitted on behalf of Sudbury Station LLC (the “Applicant”) in support of the proposed The Village at Sudbury Station residential community to be located at 30 Hudson Road in Sudbury, 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*, The Village at Sudbury Station 40B Development, Sudbury, Massachusetts; MDM Transportation Consultants, Inc.; December 2015;
2. *Comprehensive Permit Application Under M.G.L. Chapter 40B, Sections 20-23*, The Village at Sudbury Station, Sudbury Station LLC, Inc., January 2016;
3. *Preliminary Site Plan* for The Village at Sudbury Station, Sudbury, Mass.; Sullivan, Connors and Associates; January 25, 2016, no revisions; and
4. *Architectural Plans*, Sudbury Station; Cube 3 Studio, undated.

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 December 2015 *Traffic Impact and Access Study* (the “December 2015 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 updated traffic count information and analyses for

the study area intersections, and that specific elements of the *Preliminary Site Plan* be reviewed with regard to: i) lines of sight at the Project site roadway intersections; ii) 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 construction of 250-unit residential apartment community to be known as The Village at Sudbury Station and located at 30 Hudson Road in Sudbury, Massachusetts. The Project will consist of a mix of two story townhouse style buildings and three and four story apartment buildings, with a clubhouse building and other ancillary structures and supporting amenities. The Project site encompasses approximately 40.6± acres of undeveloped land bounded by residential and agricultural properties, low-lying wetlands, and areas of open and wooded space to the north; residential properties and Hudson Road to the south; a town cemetery, areas of open and wooded space, and Concord Road to the east; and a former railroad right-of-way that will become the Bruce Freeman Rail Trail to the west. Two points of access will be provided to the Project site consisting of a new roadway that will intersect the north side of Hudson Road approximately 120 feet east of Peakham Road (measured between the centerline of both roadways) and the formalization of Peter's Way, an unimproved gravel drive that intersects the west side of Concord Road south of Candy Hill Road

On-site parking is proposed for 501 vehicles consisting of 256 garage spaces and 245 surface parking spaces. The parking ratio provided is approximately 2.0 spaces per residential unit.

## **DECEMBER 2015 TRAFFIC IMPACT AND ACCESS STUDY**

### **General**

***Comment:*** The December 2015 TIAS was prepared under the direction of Mr. Robert J. Michaud, P.E. (MA P.E. No. 38101, Civil) and was completed in a professional manner and following the applicable standards of care.

***The Applicant's engineer should clarify the number of residential units that are proposed and the number of parking spaces that are to be provided as their appears to be a discrepancy between the information shown on the Preliminary Site Plan and that referenced in the December 2015 TIAS.***

## **Existing Conditions**

### **Study Area**

The study area evaluated for the Project consisted of Hudson Road (Route 27) and Concord Road, and the following five (5) intersections:

- Route 27 at Concord Road
- Route 27 at the Sudbury Town Square Driveways
- Route 27 at Peakham Road
- Route 27 at Connector Road
- Concord Road at Connector Road

**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 27 and Concord Road in the vicinity of the Project site over a continuous 48-hour period (Wednesday through Thursday) in September and December 2014 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) and evening (4:00 to 6:00 PM) peak periods in December 2014. A review of seasonal adjustment data available from MassDOT indicated that traffic volume conditions during the month of September are representative of an above average condition, with traffic volumes during the month of December found to be approximately 3.0 percent below average conditions. As such, an adjustment to the September traffic count data was not required and the December 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 27 and Concord Road in the vicinity of the Project site 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 33 miles per hour (mph) on Route 27, which is lightly above the posted speed limit in the vicinity of the Project site (30 mph), and approximately 40 mph on Concord Road, which is 5 mph above the posted speed limit in the vicinity of the Project site (35 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; however, we note that the manual turning movement counts at the majority of the study intersections were collected for only a one-hour period in the morning and evening, with some locations appearing to provide 45-minutes of data. New manual turning movement counts should be conducted at all of the study area intersections on an average weekday (Tuesday, Wednesday or*

***Thursday) from 7-9 AM and 4-6 PM, and the existing conditions traffic volumes and the associated analyses should be revised accordingly.***

### **Pedestrian and Bicycle Facilities**

An inventory of pedestrian facilities within the study area was included in the roadway and intersection descriptions presented in the December 2015 TIAS. As noted therein, a sidewalk is provided continuously along the south side of Route 27 within the study area, along the west side of Peakham Road approaching Route 27, along the east side of Concord Road south of Route 27 and along the west side of Concord Road at and to the north of Candy Hill Road. Marked crosswalks are provided for crossing Route 27 at the Peter Noyes Elementary School and at the Sudbury Town Hall; across the Concord Road south leg and Route 27 east leg of the Route 27/Concord Road intersection; across Concord Road south of Candy Hill Road; and across Peakham Road at Route 27. The Route 27/Concord Road intersection includes pedestrian pushbuttons, signal indications and phasing for the Route 27 and Concord Road crosswalks.

The December 2015 TIAS did not include a description of existing bicycle accommodations within the study area. The *Future Conditions* section of the December 2015 TIAS did include a description of Phase 2D of the Bruce Freeman Rail Trail which will traverse the former railroad right-of-way immediately adjacent to the Project site (west side) and, when complete, will provide a continuous multi-use recreational trail between Framingham and Lowell, with connections to the Mass Central Trail in Sudbury.

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

***An inventory of existing bicycle accommodations within the study area was not included in the December 2015 TIAS and should be provided given that the schedule for advancement of Phase 2D of the Bruce Freeman Rail Trail is not defined at this time. This will allow for an understanding of potential opportunities to integrate the Project into available transportation resources with the goal of reducing the overall traffic and parking demands associated with the Project.***

### **Public Transportation**

A review of available public transportation resources serving the study area was not undertaken as a part of the December 2015 TIAS. Based on our review, it was identified that the study area is not currently served by regularly scheduled public transportation services; however, the Town of Sudbury is a member of the Metro West Regional Transit Authority (MWRTA). MWRTA bus service is currently provided along Route 20 in Marlborough and to the Nobscott Shopping Center in Framingham. A recently completed service assessment prepared by the MWRTA identifies extension of the Marlborough service route (Route 7C) to Sudbury and Wayland along Route 20 and the Framingham service routes (Route 2 and 3) into Sudbury as recommended future service plan expansions.



## **Motor Vehicle Crash Summary**

Motor vehicle crash information was obtained for the study area intersections from MassDOT for the most recent 4-year period available (2010 through 2013, inclusive). Based on a review of this information, it was determined that the study area intersections experienced an average of seven (7) or fewer motor vehicle crashes per year, with the signalized intersection of Route 27 at Concord Road experiencing the largest number of reported crashes over the 4-year review period (26 total), the majority of which resulted in property damage only. All of 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.

***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. A review of the MassDOT statewide High Crash Location List and the Highway Safety Improvement Program (HSIP) listing for the study area did not indicate any listed locations.*

## **Future Conditions**

### **No-Build Conditions**

Traffic volumes within the study area were projected to 2020, which represents a 5-year planning horizon from the existing conditions base year (2015). The future condition traffic volume projections were developed by applying a background traffic growth rate to the 2015 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 0.5 percent per year was established based on a review of historic traffic growth data available from MassDOT.

The Applicant's engineer consulted with the Sudbury Planning Department 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 (0.5 percent per year). Based on these discussions, the continued build-out/occupancy of the Sudbury Town Square commercial development (29,300± sf retail/commercial space) was identified for inclusion in the future condition traffic volume projections. At the time that the traffic counts that form the basis of the December 2015 TIAS were completed, approximately 25,490 sf of the retail/commercial space was identified as being vacant. Traffic volumes associated with the occupancy of the vacant retail/commercial space were developed by the Applicant's engineer and were incorporated into the future condition traffic volume projections.

In addition, the Applicant's engineer consulted with MassDOT and the Town of Sudbury 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, the Route 27/Concord Road intersection improvement project was identified for inclusion in the future conditions analysis. In addition, the Applicant's engineer provided an update on the status of Phase 2D of the Bruce Freeman Rail Trail (discussed previously).



**Comment:** *We are in general agreement with the methodology that was used to develop the future 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.*

***The Applicant's engineer should update the No-Build condition traffic volume projections and analyses to reflect the new existing condition traffic count data. In addition, the future conditions baseline should be adjusted to provide a 7-year planning horizon (2023) consistent with current MassDOT guidelines for the preparation of Transportation Impact Assessments.***

### **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>1</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 traffic characteristics of the Project.

In addition, the Applicant's engineer presented traffic volume projections for the Project using trip rates derived from three (3) apartment communities located in Braintree, Burlington and Waltham, Massachusetts, respectively, which illustrated that the use of the ITE data would result in higher traffic volume projections for the Project. The higher traffic volumes resulting from the use of the ITE trip-generation data were used to assess the potential impact on the transportation infrastructure and resulted in the following trip projections for the Project:

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<sup>1</sup>*Trip Generation*, 9<sup>th</sup> Edition; Institute of Transportation Engineers; Washington, DC; 2012.

**THE VILLAGE AT SUDBURY STATION  
 TRAFFIC VOLUME PROJECTIONS**

Time Period/Direction	Vehicle Trips
	Proposed Apartment Community (250 Units) <sup>a</sup>
<i>Average Weekday Daily:</i>	
Entering	819
<u>Exiting</u>	<u>819</u>
Total	1,638
<i>Weekday Morning Peak Hour:</i>	
Entering	25
<u>Exiting</u>	<u>101</u>
Total	126
<i>Weekday Evening Peak Hour:</i>	
Entering	101
<u>Exiting</u>	<u>54</u>
Total	155

<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 Sudbury obtained from the U.S. Census and then refined based on existing travel patterns within the study area. Based on this review, 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 27	East	45
Route 27	West	15
Concord Road	North	15
Concord Road	South	20
Peakham Road	South	<u>5</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 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 2015 Existing, 2020 No-Build and 2020 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:

***Route 27/Concord Road*** – This signalized intersection was shown to operate at an overall LOS “C/D” during the weekday peak hours under all analysis conditions; however, it was noted that the Concord Road southbound approach was operating at LOS “F” during the weekday evening peak-hour independent of the Project. Project-related impacts were defined as an increase in overall delay of 4 seconds or less, with vehicle queue increases of approximately 5 or fewer vehicles.

***Route 27/Peakham Road*** – Critical movements at this unsignalized intersection (all movements from Peakham Road) were shown to operate under constrained conditions (LOS “F”) during both the weekday morning and evening peak hours under all analysis conditions and independent of the Project. The Applicant’s engineer performed delay observations at the intersection and noted that actual delays at the intersection are lower than predicted by the analysis model. Project-related impacts at the intersection were defined as an increase in motorist delay of approximately 5 seconds and in vehicle queuing of approximately 1 vehicle.

***Route 27/Connector Road*** – All movements at this unsignalized intersection were shown to operate at a LOS “D” or better under all analysis conditions, with Project-related impacts defined as an increase in motorist delay of 4 seconds or less which resulted in a degradation in LOS from “C” to “D” during the weekday morning peak-hour for the Connector Road.

***Concord Road/Connector Road*** - All movements at this unsignalized intersection were shown to operate at a LOS “B” or better under all analysis conditions, with no material increase in motorist delays noted as a result of the addition of Project-related traffic.

***Route 27/Project Site Roadway*** – Left-turn movements exiting the Project site are predicted to operate under constrained conditions (LOS “F”) with a residual vehicle queue of approximately 2 to 4 vehicles which can be contained within the Project site without impeding access or on-site circulation. The Applicant’s engineer noted that actual delays are expected to be less than predicted by the analysis model.





All movements along Route 27 approaching the Project site roadway are predicted to operate at LOS “A” with no material vehicle queuing reported.

**Concord Road/Project Site Roadway** – All movements exiting the Project site roadway are predicted to operate at LOS “C” during both the weekday morning and evening peak hours with a residual vehicle queue of approximately 1 vehicle. All movements along Concord Road approaching the Project site driveway are predicted to operate at LOS “A” with no material vehicle queuing reported.

**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).*

***The Applicant’s engineer should revise the traffic operations analysis to reflect the updated traffic volumes resulting from the new turning movement counts. The updated analysis results should be summarized in a tabular format consistent with that presented in the December 2015 TIAS. In addition, the Applicant’s engineer should confirm the timing of the traffic signal system at the Route 27/Concord Road intersection and verify that a different cycle length is used for the weekday morning and evening peak hours.***

### **Sight Distance**

An evaluation of sight distances at the Project site roadway intersections with Route 27 and Concord Road was conducted by the Applicant’s engineer in accordance with American Association of State Highway and Transportation Officials (AASHTO)<sup>2</sup> standards. Based on these measurements, the Applicant’s engineer indicated that lines of sight to and from the Route 27 Project site roadway intersection exceed or can be made to exceed 500 feet, where a minimum sight line of 250 feet is required for safe operation based on an approach speed of 35 mph, which is consistent with the travel speed measured by the Applicant’s engineer (33 mph) and is also in excess of the posted speed limit (30 mph). Lines of sight to and from the Concord Road Project site roadway intersection were found to exceed or could be made to exceed 400 feet, where a minimum sight line of 325 feet is required for safe operation based on an approach speed of 42 mph, which is consistent with the measured travel speed on Concord Road approaching the Project site roadway (between 38 and 42 mph) and is 7 mph above the posted speed limit (35 mph).

The Applicant’s engineer noted that in both cases vegetation trimming/removal and regrading of shoulder areas will be required in order to provide and maintain the required sight lines at the Project site roadway intersections.

**Comment:** *We are in agreement that sight lines at the Project site roadway intersections can be made to meet or exceed the required distances for safe operation with the vegetation trimming/removal and regrading of shoulder areas noted by the Applicant’s engineer.*

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<sup>2</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.

*The Applicant's engineer should provide a sight distance plan illustrating the required sight lines to and from the Project site roadway intersections in both plan and profile view that illustrate the existing and proposed surface elevations and any obstructions that need to be removed within the sight triangle areas. These plans will allow for an understanding of the location(s) and extent of any regrading of land that may be necessary to attain the required sight lines.*

*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 roadways 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 roadways. In addition, the Applicant should be required to selectively trim/remove vegetation along the Project site frontage where necessary in order to enhance sight lines to and from the Project site roadways.*

### **Recommendations**

The Applicant's engineer provided specific recommendations for the design and operation of the Project site roadway intersections with Route 27 and Concord Road that included the following measures:

- Vehicles exiting the Project site should be placed under STOP-sign control with marked STOP-lines provided.
- Plantings and structures to be installed adjacent to the Project site roadway intersections with Route 27 and Concord Road should not exceed 2-feet in height.
- Existing vegetation and structures within the sight triangle areas of the Project site roadways should be cleared, removed or trimmed/maintained with regrading as necessary to provide and maintain the required sight lines.
- The Route 27 Project site roadway approaching Route 27 should provide separate left and right turn lanes exiting the Project site and a single entering travel lane.
- The Concord Road Project site roadway should provide one entering and one exiting travel lane.
- Corner radii at the Project site roadway intersections with Route 27 and Concord Road should be designed to accommodate the turning requirements of a single-unit truck and emergency response vehicles.
- A sidewalk should be provided along one side of the Project site roadway extending to Route 27 and Concord Road, with the sidewalk connection to Concord Road extending to meet the existing sidewalk just south of Candy Hill Road and the sidewalk connection to Route 27 to include the installation of a crosswalk to cross Route 27 between Peakham Road and the Project site roadway. Pedestrian crossing warning signs would be installed at and in advance of the existing crosswalk across Concord Road and for the proposed crosswalk across Route 27.

**Comment:** *We are in general 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 24-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>3</sup>*
- 5. Snow windrows along the Project site frontage within the sight triangle areas of the Project site roadways shall be promptly removed where such accumulations would exceed 2-feet in height.*

## **SITE PLANS**

The following comments are offered with respect to our review of the *Preliminary Site Plan* for The Village at Sudbury Station prepared by Sullivan, Connors and Associates and January 25, 2016, no revisions (hereafter referred to as the "*Preliminary Site Plan*"), and are in addition to the suggested recommendations outlined above for the December 2015 TIAS that relate to the *Preliminary Site Plan*.

- 1. A truck turning analysis should be completed for the Project using the following design parameters as guidance: i) the analysis should be completed using the AutoTurn® or similar analysis software for the following design vehicles: an SU-30/40 (small delivery/moving vehicle and trash/recycling vehicle) and the Town of Sudbury Fire Department design vehicle; ii) the analysis should include the swept path for the front and rear tires of the design vehicles and any overhangs that may extend past the front and rear bumper of the vehicle (i.e., basket of the aerial ladder of the fire truck if so equipped); iii) the analysis should depict all maneuvers required to enter and exit the Project site by way of Route 27 and Concord Road (both left and right-turn movements entering and exiting), and all turning and maneuvering required within the Project site; iv) Back-up maneuvers, where required, should be clearly identified.*
- 2. If the existing single-family home at 30 Hudson Road is to be retained as a part of the Project, the access to the home should be relocated to the Project site roadway and the existing driveway on Route 27 should be closed.*

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<sup>3</sup>Manual on Uniform Traffic Control Devices (MUTCD); Federal Highway Administration; Washington, DC; 2009.

3. *The grade of the Project site roadways should not exceed 2 percent within 50-feet (two (2) car lengths) of Route 27 and Concord Road in order to provide a leveling area for vehicles exiting the Project site.*
4. *A centerline profile should be provided for the Project site roadway in order to verify roadway grades within the Project site and on the approaches to Route 27 and Concord Road.*
5. *An area for service/maintenance vehicle parking for the wastewater treatment plant should be provided.*
6. *Sidewalks and wheelchair ramps compliant with the Americans with Disabilities Act (ADA) should be provided where pedestrian crossings are proposed within the Project site and at the Project site driveways.*
7. *Given the length of the access roadway and the potential for increased travel speeds, raised crosswalks with accompanying warning signs should be used within the Project where crossings are proposed, excepting those located at an intersection.*
8. *The approaches to the modern roundabouts should include raised splitter islands in order to channelize entering and exiting traffic and reinforce the one-way circulation pattern.*
9. *A school bus waiting area should be provided within the Project site or at an appropriate location defined in consultation with the Town of Sudbury School Department.*
10. *Bicycle parking should be provided within the Project site and reflected on the Preliminary Site Plan, including exterior bicycle racks proximate to the clubhouse building and weather protected bicycle parking in a secure area within each of the three and four story apartment buildings.*
11. *A sign and pavement marking plan should be provided as a part of the Preliminary Site Plan in order to verify that the proposed traffic control devices are appropriately designed and located within the Project site. This plan should be developed by or in consultation with the Applicant's Traffic Engineer given the unique signing requirements for the modern roundabouts that are proposed within the Project site.*
12. *The sight triangle areas for the Project site roadway intersections with Route 27 and Concord Road should be added to the Preliminary Site Plan 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."*
13. *A tenant move in/out management plan (narrative) should be provided and reflected in the truck turning analysis for the Project.*
14. *The Applicant should consider incorporating electric vehicle charging stations into the Project and coordinating with ZipCar to locate vehicles at the Project site.*



***15. The Applicant's engineer should review the parking spaces proximate to the trash/maintenance building and Building #1 as the end spaces at both locations do not appear to provide sufficient maneuvering area for vehicles to exit these spaces.***

## **PARKING**

The Project will provide parking for 501 vehicles consisting of 256 garage spaces and 245 surface parking spaces, or a parking ratio of approximately 2.0 spaces per residential unit. This parking ratio is consistent with that required pursuant to Town Zoning requirements and exceeds the parking demand ratio for a residential apartment community in a suburban setting documented by the ITE (1.94 spaces per dwelling unit).<sup>4</sup>

## **SUMMARY**

VAI has completed a review of the materials submitted on behalf of Sudbury Station LLC in support of the proposed The Village at Sudbury Station residential community to be located at 30 Hudson Road in Sudbury, 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 updated traffic count information and analyses for the study area intersections, and that specific elements of the *Preliminary Site Plan* be reviewed with regard to: i) lines of sight at the Project site roadway intersections; ii) 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

cc: File

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<sup>4</sup>*Parking Generation*, 4<sup>th</sup> Edition; Institute of Transportation Engineers; Washington, D.C.; 2010.