

Ref: 7198

March 21, 2016

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

Re: Supplemental 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 supplemental 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”). This information was prepared by MDM Transportation Consultants, Inc. (MDM) in response to the comments that were raised in VAI’s March 3, 2016 review letter and consisted of a memorandum titled *Response to Peer Review Comments* dated March 15, 2016, with accompanying figures and technical appendix.

Based on our review of the supplemental information, we are satisfied that that Applicant’s engineer has addressed the comments that were raised in our review letter concerning the December 2015 TIAS. A number of our remaining comments concerning the Site Plans also appear to have been addressed and will be confirmed upon receipt and review of the revised Site Plans, with consideration of the additional comments noted herein regarding additional signs and pavement markings (stamped crosswalks) within the Project site.

For reference, listed below are the comments that were raised in our March 3, 2016 review letter that required additional information or analysis, followed by a summary of the response submitted on behalf of the Applicant, with additional comments indicated in **bolded** text for identification.

DECEMBER 2015 TRAFFIC IMPACT AND ACCESS STUDY

General

Comment: *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.*

Response: The Applicant's engineer confirmed that the Project will consist of 250 residential units and that the revised (March 14, 2016) Site Plans will reflect 494 parking spaces, a slight reduction from the 501 spaces shown on the initial Site Plan. **No further response required.**

Existing Conditions

Traffic Volumes and Data Collection

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.*

Response: The Applicant's engineer collected new traffic count data at the study area intersections on Wednesday, March 9, 2016, for a full 2-hour period in the morning (7-9 AM) and evening (4-6 PM). A review of seasonal adjustment data available from MassDOT indicated that traffic volume conditions during the month of March approximate average-month conditions and, as such, no adjustment was required to the raw traffic count data. The Applicant's engineer also indicated that the March traffic volume data was generally consistent with the data that was presented in the December 2015 TIAS. **No further response required.**

Pedestrian and Bicycle Facilities

Comment: *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.*

Response: The Applicant's engineer noted that at the present time bicycle accommodations are not provided within the study area; however, the Project site abuts the future alignment of the Bruce Freeman Rail Trail and can be readily connected to the trail when it is completed. **No further response required.**

Future Conditions

No-Build Conditions

Comment: *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.*

Response: As requested, the Applicant's engineer provided revised future No-Build traffic volume projections based on a 7-year projection from the current year (2016) and using the methodology described in the December 2015 TIAS. **No further response required.**

Traffic Operations Analysis

Comment: *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.*

Response: The Applicant's engineer provided revised traffic operations analyses using the updated (2016) traffic count data and the 7-year future conditions planning horizon (2023) for both the No-Build and Build conditions. In addition, the timing of the traffic signal system at the Route 27/Concord Road intersection was field verified by the Applicant's engineer.

A review of the results of the revised traffic operations analysis indicates general consistency with the results that were presented in the December 2015 TIAS, with Project-related impacts defined as an increase in motorist delay of between 2 to 5 seconds on average and in vehicle queuing of between 1 and 2 vehicles. **No further response required.**

The Applicant committed to fine-tuning the traffic signal timing at the Route 27/Concord Road intersection within 6-months of substantial completion of the Project (defined as 80 percent occupancy). This commitment should be a condition of any approval that may be granted for the Project.

Sight Distance

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.*

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.

Response: The Applicant's engineer provided the requested sight distance plans which indicate that the required sight lines can be attained with the removal of trees and vegetation located within the Project site or the public right-of-way, and that regrading of the existing surface topography is not required. **No further response required.**

In addition, the Applicant's engineer indicated that the revised (March 14, 2016) Site Plans depict the sight triangle areas for both driveways and include the requested note pertaining to sight line accommodations and maintenance. **No further response required pending review of the revised Site Plans.**

Recommendations

Comment 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).*

Response: The Applicant's engineer confirmed that all roadways and circulating aisles within the Project are 24-feet wide. **No further response required.**

Comment 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.*

Response: The Applicant's engineer confirmed that travel aisles adjacent to parking are 24-feet wide. **No further response required.**

Comment 3: *Fire lanes and/or emergency vehicle access roads should be a minimum of 20-feet in width.*

Response: The Applicant's engineer stated that 24-foot wide circulating aisles are provided for accessing at least 2 sides of each residential building and that 20-foot wide reinforced

travelled-ways have been added at the request of the Fire Department to provide access to a third side of each residential building. **No further response required pending review of the revised Site Plans.**

Comment 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).¹*

Response: The Applicant's engineer indicated that the final Site Plans will include MUTCD compliant signs and pavement markings, and that the revised (March 14, 2016) Site Plans include the appropriate MUTCD compliant signs and pavement markings at the Project site driveways and at the proposed roundabout. **No further response required pending review of the revised Site Plans.**

Comment 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.*

Response: The Applicant's engineer indicated concurrence with this recommendation and stated that the revised (March 14, 2016) Site Plans include a note to this effect. **No further response required pending review of the revised Site Plans.**

SITE PLANS

Comment 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.*

Response: The Applicant's engineer provided the requested turning analyses for the requisite vehicles which demonstrated that the subject vehicles can access and circulate within the Project site in an unimpeded manner. That being said, **we note that the SU-40 design vehicle crosses over the centerline of the both driveways when entering the Project site. As such, the corner radii should be increased or suitably modified so that the SU-40 design vehicle does not cross the centerline of the driveways.**

¹Manual on Uniform Traffic Control Devices (MUTCD); Federal Highway Administration; Washington, DC; 2009.

Comment 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.*

Response: The Applicant's engineer confirmed that the existing home is to be retained as a part of the Project and that the driveway will remain separate. While it is desirable to relocate the driveway and eliminate a curb-cut in close proximity to the access to the Project site, traffic volumes associated with the existing home are minimal and, as long as clear lines of sight are provided between the drives, they can function in a safe manner. **No further response required.**

Comment 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.*

Response: The Applicant's engineer indicated that the revised (March 14, 2016) Site Plans include centerline profiles of the driveways and confirmed that the approach grades do not exceed 2 percent within 50 feet of Route 27 and Concord Road. **No further response required pending review of the revised Site Plans.**

Comment 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.*

Response: The Applicant's engineer indicated that the revised (March 14, 2016) Site Plans include centerline profiles of the driveways and that driveway grades do not exceed 6 percent. **No further response required pending review of the revised Site Plans.**

Comment 5: *An area for service/maintenance vehicle parking for the wastewater treatment plant should be provided.*

Response: The Applicant's engineer indicated that the revised (March 14, 2016) Site Plans include 2 parking spaces at the wastewater treatment plant for service/maintenance vehicles. **No further response required pending review of the revised Site Plans.**

Comment 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.*

Response: The Applicant's engineer indicated that ADA compliant sidewalks and wheelchair ramps will be provide within the Project site, the details of which will be shown on the final Site Plans for the Project. **No further response required pending review of the revised Site Plans.**

Comment 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.*



Response: The Town of Sudbury Fire Department has indicated that they would not approve the use of raised features within the travelled-way. As such, we recommended that the crosswalks that are to be provided within the Project site be constructed of stamped asphalt or similar treatment and colorized to provide both a visual and tactile differentiation of the pedestrian focused nature of both the crossing and the environment within the Project site.

Comment 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.*

Response: The Applicant's engineer provided a detail of the modern roundabout that included the addition of flush islands on each leg of the roundabout that would be constructed of stamped asphalt or similar so as to allow truck off-tracking. The design features of the modern roundabout have been added to the revised (March 14, 2016) Site Plans. **We recommend that advance warning signs be provided on the approaches to the roundabout.**

Comment 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.*

Response: The Applicant's engineer indicated that a school bus waiting area will be provided within the Project site at an appropriate location(s) designed by the Town of Sudbury School Department. Once defined, the Site Plans will be revised accordingly. **This should be a condition of any approval that may be granted for the Project. No further response required.**

Comment 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.*

Response: The Applicant's engineer indicated that secure bicycle storage areas will be provided within each residential building and that exterior bicycle racks will be added proximate to the clubhouse building. **This should be a condition of any approval that may be granted for the Project. No further response required.**

Comment 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.*

Response: The Applicant's engineer provided sign and pavement marking exhibits for the modern roundabout and at the Project site driveway intersections with Route 27 and Concord Road, and indicated that these features have been incorporated into the revised

(March 14, 2016) Site Plans. **No further response required pending review of the revised Site Plans.**

Comment 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.”*

Response: The Applicant’s engineer indicated that the revised (March 14, 2016) Site Plans depict the sight triangle areas for both driveways and include the requested note pertaining to sight line accommodations and maintenance. **No further response required pending review of the revised Site Plans.**

Comment 13: *A tenant move in/out management plan (narrative) should be provided and reflected in the truck turning analysis for the Project.*

Response: The Applicant presented a comprehensive narrative on the procedures and policies that will be used to manage and schedule tenant moves which includes on-site management, a procedures manual and building/elevator scheduling. **We are in agreement with the procedures that have been outlined and recommend that the management plan be included or referenced in any conditions of approval that may be granted for the Project. No further response required.**

Comment 14: *The Applicant should consider incorporating electric vehicle charging stations into the Project and coordinating with ZipCar to locate vehicles at the Project site.*

Response: The Applicant’s engineer indicated that up to four (4) electric vehicle charging stations will be provided within the Project site and that reserved parking spaces will be provided for a car sharing service should a service provider express interest in locating vehicles at the Project site. **This should be a condition of any approval that may be granted for the Project and the location of the electric vehicle charging stations should be shown on the final Site Plans. No further response required.**

Comment 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.*

Response: The Applicant’s engineer provided a turning analysis for the subject spaces that demonstrated that a vehicle can exit the spaces in an unimpeded manner. **We note that this conclusion is predicated on the garage access being open at all times (i.e., no gate or door can be present). No further response required.**

PARKING

The Applicant's engineer indicated that the parking supply for the Project has been reduced to 494 parking spaces, or a parking ratio of approximately 1.98 spaces per residential unit, which is now slightly below the parking ratio required pursuant to Town Zoning requirements (2.0 spaces for each dwelling unit). As such, the Applicant should add this to the list of waivers that are required for the Project to the extent that it has not already been identified. We note that the parking ratio that is currently proposed (1.98 spaces per residential unit) is slightly above the parking demand ratio for a residential apartment community in a suburban setting documented by the ITE (1.94 spaces per dwelling unit).²

SUMMARY

VAI has completed a review of the supplemental 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. This information was prepared by MDM in response to the comments that were raised in VAI's March 3, 2016 review letter. Based on our review of the supplemental information, we are satisfied that that Applicant's engineer has addressed the comments that were raised in our review letter concerning the December 2015 TIAS. A number of our remaining comments concerning the Site Plans also appear to have been addressed and will be confirmed upon receipt and review of the revised Site Plans, with consideration of the additional comments noted herein regarding additional signs and pavement markings (stamped crosswalks) within the Project site.

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

²*Parking Generation*, 4th Edition; Institute of Transportation Engineers; Washington, D.C.; 2010.