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Ref: 7198

June 14, 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) and consisted of a memorandum dated May 31, 2016 with accompanying figures and technical appendix that was prepared in response to the comments and request for further analyses raised at the March 21, 2016 Zoning Board of Appeals public hearing concerning the Project. Specifically, the memorandum provided the following information:

1. Fire truck turning analysis at the Project site driveway intersections with Hudson Road and Concord Road;
2. Potential measures internal to the Project site to reduce cut-through traffic between Concord Road and Hudson Road;
3. Assessment of Project-related impacts to Candy Hill Road; and
4. Inventory of existing and proposed pedestrian facilities and crossing locations within the study area that link the Project site to the Peter Noyes and General John Nixon Elementary Schools.

In addition to the MDM memorandum, VAI reviewed the materials submitted by the public in response to the presentation at the March 21, 2016 Zoning Board of Appeals public hearing, including a video log of vehicle queues along Concord Road.

Based on our review of the supplemental information and with consideration of the comments that were offered by the public after the subject hearing, we have requested that the Applicant provide further analysis and design modifications for the Project site driveways with a particular focus on emergency vehicle accommodations and limiting the potential for increased use of Candy Hill Road, and that consideration be given to enhancements to the pedestrian crossings of Hudson Road and Concord Road.

The following summarizes our review of the subject information. Our comments are indicated in *italicized* text, with those requiring responses or further analysis by the Applicant ***bolded*** for identification.

MAY 31, 2016 SUPPLEMENTAL TRANSPORTATION RESPONSES

(1) Fire Apparatus Accessibility at Hudson Road Driveway

The Applicant's engineer provided a turning analysis for the Project site driveway intersections with Hudson Road and Concord Road for the largest anticipated responding emergency vehicle identified by the Town of Sudbury Fire Department (aerial ladder truck). This analysis was performed using the AutoTurn® vehicle turning simulation software and was presented on Figure 1 and Exhibit 2A, and illustrate that the tire paths of the subject vehicle are contained within the paved area of the driveways with minor centerline incursions.

Comment: ***The Applicant's engineer should provide revised AutoTurn® exhibits for both driveways that show not only the tire paths of the fire truck, but also the swept path of the bumper and ladder overhangs. To the extent required, the corner radii of the driveways should be modified such that all elements of the fire truck (tire paths and overhangs) are accommodated within the paved areas without centerline incursions.***

(2) Measures to Reduce Potential for Site "Cut-Through" Traffic

In order to reduce the potential for motorists to cut-through the Project site in order to by-pass vehicle queues at the Hudson Road/Concord Road intersection, the Applicant has proposed to install a gate system on Peter's Way (access roadway to the Project from Concord Road) that will restrict use of this driveway to residents, emergency vehicles and authorized guests. A vehicle turnaround area has also been added in advance of the gate system to allow errant vehicles that enter the driveway to reverse direction and exit back to Concord Road. In addition, the Applicant has proposed to redesign the Peter's Way approach to Concord Road to restrict (prohibit) left-turn movements exiting the Project site to Concord Road northbound by means of a channelizing island with accompanying signs and pavement markings.

Comment: *We agree with the measures that have been proposed by the Applicant to reduce the potential for cut-through traffic through the Project site between Concord Road and Hudson Road, and further offer that implementation of appropriately designed measures to prohibit left-turn movements exiting the Project site to Concord Road will serve to address the identified sight distance restriction that is posed when vehicle queues on Concord Road from the Hudson Road/Concord Road intersection extend to and past Peter's Way. That being said,* ***the Applicant should revise the proposed modifications to Peter's Way to address the following comments, which should also be reflected in the revisions to the fire truck turning analysis discussed previously:***

1. ***Signs should be posted on Peter's Way at Concord Road stating "Residents Only" and "No Outlet". Similar signs should be posted on the northbound exit from the roundabout internal to the Project site.***

2. ***The proposed gate system should incorporate an emergency vehicle pre-emption system (OPTICOM™) for responding emergency vehicles.***
3. ***In order to prohibit left-turn movements exiting Peter's Way to Concord Road, a necessity given the sight distance restrictions posed by vehicle queues along Concord Road at Peter's Way, the proposed channelizing island should be raised with accompanying corner radii on the island and driveway that position exiting vehicles such that a left-turn maneuver cannot be made in a practical manner.***
4. ***Given the limited utility of allowing left-turn entering movements from Concord Road, the Applicant could consider restricting access by way of Peter's Way to right turns only, prohibiting left-turn movements both entering and exiting excepting emergency vehicles entering from Concord Road.***

(3) Candy Hill Road Impacts

The Applicant's engineer collected weekday daily traffic volume data on Candy Hill Road by means of an automatic traffic recorder (ATR) and weekday morning and evening peak-hour manual turning movement counts at the intersections of Concord Road at Candy Hill Road and Concord Road at Plympton Road in March 2016. In addition, baseline travel time measurements were conducted to/from the Project site during the weekday morning peak-hour along three (3) travel routes: 1) Project site to Water Row via Hudson Road and Old Sudbury Road; 2) Project site to Old Sudbury Road via Concord Road, Candy Hill Road, Plympton Road and Water Row; 3) Project site to Water Row via Concord Road and Old Sudbury Road. As a result of this data collection effort, the Applicant's engineer offered the following observations with respect to Candy Hill Road:

- Candy Hill Road was observed to be a low volume roadway, accommodating approximately 320 vehicles per day on an average weekday, with weekday peak-hour traffic volumes ranging from 30 vehicles during the morning peak-hour to 40 vehicles during the evening peak-hour.
- Peak directional flow of traffic along Candy Hill Road was observed to be in the eastbound direction (toward Plympton Road) during both the weekday morning and evening peak hours.
- During the weekday morning peak-hour, it was observed (and apparent) that Candy Hill Road is used to avoid congested conditions on Concord Road associated with student drop-off activities at the Peter Noyes Elementary School.
- Plympton Road was found to serve as an alternate travel route between Concord Road and Old Sudbury Road to avoid back-ups at the Hudson Road/Concord Road intersection. Hourly volumes on Plympton Road were shown to range from 121 vehicles during the weekday morning peak-hour to 123 vehicles during the weekday evening peak-hour.
- The shortest travel route from the Project site to a common point at the intersection of Old Sudbury Road at Water Row both in terms of the distance travelled and overall travel time was found to be via Hudson Road and Old Sudbury Road.
- The use of Candy Hill Road by Project-related traffic to by-pass congestion at the Hudson Road/Concord Road intersection during the weekday morning peak-hour was found to be longer both by distance (less than 0.5 miles) and travel time (approximately 35 seconds) over the use of either Hudson Road or Concord.

As a means to reduce the likelihood of Project-related traffic using Candy Hill Road and to discourage inducement of additional traffic to use Candy Hill Road to by-pass the Hudson Road/Concord Road intersection, the Applicant affirmed their commitment to implement access control via a gate system on Peter's Way and to restrict left-turn movements from Peter's Way to Concord Road northbound.

Comment: We are in agreement with the information that has been provided by the Applicant's engineer concerning the classification of Candy Hill Road as a low volume roadway and that the use of Candy Hill Road does not represent the shortest travel route from the Project site to travel south (east) on Old Sudbury Road during the weekday morning peak-hour.

We would recommend that the Applicant's engineer collect additional travel time data for the reverse movement (entering the Project site vs. exiting) during the weekday evening peak-hour for the travel routes that were evaluated as vehicle queues on the Old Sudbury Road westbound approach to Concord Road were observed to be excessive during this period. These queues were observed to extend beyond the Peter Noyes Elementary School at times and may influence the selection of return travel routes to the Project site during the evening peak commuter period.

Based on a review of the alignment of Candy Hill Road, the nature of the abutting land use (residential) and the proximity of roadside objects (trees, utility poles, etc.), it is apparent that intensification of the use of the roadway by other than occasional traffic and that associated with the residential homes along the roadway is not advisable. Portions of the roadway are limited in width with restricted sight lines, limiting the ability to safely convey two-way traffic at volumes that exceed those currently using Candy Hill Road. For this reason, it is important that the Applicant design the exit from Peter's Way in a manner that restricts or limits the potential for increased use of Candy Hill Road. Independent of the Project, the Town may want to consider implementing peak period turn restrictions to/from Candy Hill Road at Concord Road or Plympton Road as a means to reduce cut-through traffic.

(4) Pedestrian Route Inventory

The Applicant's engineer conducted a review of pedestrian accommodations between the Project site and the Peter Noyes and General John Nixon Elementary Schools with regard to compliance with the accessibility standards of the Americans with Disabilities Act (ADA), crosswalk locations and general connectivity. In addition, pedestrian crossing volumes were also observed during the school peak periods.

The Applicant's engineer noted the pedestrian access and crosswalk improvements that are being undertaken as a part of projects that are being advanced by the Town within the Town Center area, and described the pedestrian travel routes and improvements that will be provided as a part of the Project to link the Project site to the existing and improved sidewalk infrastructure along both Hudson Road/ Old Sudbury Road and Concord Road. These improvements include the addition of a crosswalk and accompanying sidewalk for crossing Hudson Road east of Peakham Road at the location of the future rail-trail crossing and reconstructing the crosswalk and associated ADA compliant wheelchair ramps for the crossing of Concord Road at Candy Hill Road. Both proposed crosswalks will include the requisite

pedestrian crossing warning signs at and in advance of the crosswalks, as well as new/enhanced crosswalk pavement markings. Internal to the Project site a sidewalk will be provided along one or both sides of the roadway network between Hudson Road and Concord Road. In addition, the Applicant's engineer provided photographs of sight lines to and from the proposed crossing of Hudson Road.

Comment: We are in general agreement with the description of existing and planned future pedestrian accommodations as presented by the Applicant's engineer, and with the proposed connections and enhancements to these accommodations that are proposed as a part of the Project.

Given the speed of traffic approaching the Concord Road crossing at Candy Hill Road (prevailing speed of approximately 40 miles per hour), we would suggest that the Applicant consider the installation of pedestrian activated rectangular rapid flashing beacons (RRFBs) on either side of the improved crossing or a High Intensity Activated cross-WalK (a.k.a. "HAWK") pedestrian beacon to facilitate the safe crossing of Concord Road. Should similar accommodations be desired for the Hudson Road crossing, we would suggest the use of RRFBs vs. the HAWK system given the proximity of the crossing to Peakham Road.

SUMMARY

VAI has completed a review of the supplemental materials submitted by MDM 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 in response to the comments and request for further analyses raised at the March 21, 2016 Zoning Board of Appeals public hearing concerning the Project. Based on our review of the supplemental information and with consideration of the comments that were offered by the public after the subject hearing, we have requested that the Applicant provide further analysis and design modifications for the Project site driveways with a particular focus on emergency vehicle accommodations and limiting the potential for increased use of Candy Hill Road, and that consideration be given to enhancements to the pedestrian crossings of Hudson Road and Concord Road. 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

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

cc: File