

Ref: 7817

April 3, 2018

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

Re: Supplemental Traffic Engineering Peer Review  
River Stone Condominiums - Ward Street (Map 124, Lots 70-75 and 26)  
Hingham, Massachusetts

Dear Emily:

Vanasse & Associates, Inc. (VAI) has completed a review of the latest supplemental materials submitted on behalf of River Stone, LLC (the "Applicant") in support of the proposed River Stone Condominiums to be located off Ward Street and Viking Lane on property shown on Assessors' Map 124, Lots 70-75 and 26, in Hingham, Massachusetts (hereafter referred to as the "Project"). This information was prepared in response to the comments that were raised in VAI's February 6, 2018 review letter and consisted of a letter dated March 9, 2018 and accompanying revised *Comprehensive Permit Plan* (revised through March 9, 2018) both prepared by McKenzie Engineering Group.

Based on our review of the supplemental information submitted by McKenzie Engineering Group in support of the Project, we are satisfied that the Applicant's engineer has been responsive to a number of our comments; however, the *Comprehensive Permit Plan* requires further refinement in order to demonstrate that access and circulation can be provided in a safe manner. We continue to recommend that the Project site roadways be increased in width from 20-feet to 24-feet in order to accommodate emergency vehicle access and circulation, on-street parking and maneuvering. In addition, the Applicant has not provided a commitment to implement safety improvements at the High Street/Ward Street/French Street intersection and has not advanced measures to address the Project's impact along Autumn Circle. We have provided suggested conditions for inclusion in a Decision to the extent that the Zoning Board of Appeals (ZBA) is inclined to advance a Decision on the Application; however, **resolution of the roadway width may impact the number of residential units that can be accommodated within the Project site.**

For reference, listed below are the comments that were raised in our February 6, 2018 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.

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

### **Motor Vehicle Crash Summary**

**Comment 1:** *As requested, the Applicant's engineer should review the MassDOT crash data for the remaining study intersections for the period 2013 through 2015, inclusive, in order to determine if there has been any material change in the number of motor vehicle crashes occurring at the study intersections from the data that was presented in the April 2016 TIAS.*

**Response:** **This comment has not been addressed. We note that the absence of this information does not impact our recommendations to the extent that the ZBA is inclined to advance a Decision on the Application.**

**Comment 2:** *As requested, the Applicant's engineer should obtain motor vehicle crash data/incident logs (crash reports are not required) for the remaining study area intersections from the Hingham Police Department for the most recent 3-year period available.*

**Response:** **This comment has not been addressed. As stated above and recognizing that the Hingham Police Department has been an active participant in reviewing the Project, the absence of this information does not impact our recommendations to the extent that the ZBA is inclined to advance a Decision on the Application.**

### **Traffic Operations Analysis**

**Comment:** *The Applicant's engineer should discuss how the proposed connection and the resulting additional traffic would impact pedestrian safety along Autumn Circle.*

**Response:** **This comment has not been addressed. The Applicant has proposed to reconfigure the cul-de-sac at the end of Autumn Circle to a modern roundabout in order to provide traffic control within the former cul-de-sac area and to serve as a traffic calming device to moderate travel speeds and reduce the potential for cut-through traffic. The should propose additional traffic calming features, pedestrian improvements and other appropriate measures to address the increased traffic that will be using Autumn Circle.**

**In addition, the Applicant did not provide an assessment of traffic operations at the intersection of Ward Street at the relocated Project site access. That being said and given that the volume of traffic at the relocated access would be similar to that which was assessed at the Ward Street/Viking Lane intersection, we would expect the relocated access would function in a manner similar to the Ward Street/Viking Lane intersection (all movements are predicted to operate at LOS B or better during the peak hours with vehicle queues of between 0 and 2 vehicles).**

### **Sight Distance (UPDATED)**

The Applicant has proposed to relocate the Ward Street access to the Project site from Viking Lane to a new roadway that will intersect the north side of Ward Street approximately 650-feet southeast of Viking Lane. The connection to Autumn Circle has been retained and the former Viking Lane connection to Ward Street is proposed to be removed. The relocation of the Ward Street access to the Project was necessitated to ensure that the sight lines for motorists exiting the Project site to Ward Street were contained entirely within land under the control of the Applicant or within the Town-owned right-of-way along Ward Street, conditions that were not afforded at Viking Lane. Further, the required minimum sight distance for safe operation was reassessed based on recent (February 2018) vehicle travel speed data for Ward Street that was provided by the Hingham Police Department which indicated that the 85<sup>th</sup> percentile vehicle travel speed ranged between 37 and 39 miles per hour (mph), which was higher than the travel speeds that were measured by the Applicant's Traffic Engineer (32-34 mph). Based on the higher observed approach speed along Ward Street (39 mph), the required minimum sight distance for safe operation at the Project site access is 290-feet vs. 240-feet.

In conjunction with the revised *Comprehensive Permit Plan* submission, the Applicant's engineer provided the intersection sight distance for the relocated Ward Street access in both plan and profile views. A review of the intersection sight distance information indicated that sight lines for a motorist exiting the Project site roadway ("Road C") currently exceed or can be made to exceed 300-feet. Significant regrading (a cut of up to approximately 8-feet) of an embankment to the west of the roadway will be required to provide and maintain the necessary sight line. The regrading is shown on the revised *Comprehensive Permit Plan* and appears to be contained entirely within the Project site.

In addition to the sight lines at the relocated Ward Street access, the Applicant's engineer also provided sight line plans for "Road D" which will intersect "Road C" approximately 120-feet north of Ward Street. This information indicates that lines to sight from "Road D" will exceed 115-feet, which is appropriate for an approach speed of 20-mph along "Road C" and is considered reasonable given the proximity of "Road D" to Ward Street.

**Comment:** We are in agreement with the Applicant's engineer that the required lines of sight for safe operation are provided or can be attained from both "Road C" and "Road D" with the regrading that is shown on the revised *Comprehensive Permit Plan*. **We offer the following comments regarding the sight distance plans:**

- 1. The object height and the driver eye height should both be set at 3.5-feet above the pavement surface. This revision will increase the line of sight that is shown and reduce the extent of the regrading that is required.**
- 2. Given that the sight line to the west from "Road C" will cross the ground surface and not an area that will be cleared during a snow storm, the ground surface should be established a minimum of 1-foot below the sight line elevation in order to allow for snow accumulation.**
- 3. The stopping sight distance along Ward Street approaching "Road C" and along "Road C" approaching "Road D" should also be provided in both plan and profile view, and included as a part of the *Comprehensive Permit Plan*. The**



stopping sight distance is required in order to demonstrate that a motorist traveling along Ward Street and “Road C” (assumed eye height of 3.5-feet above the pavement surface) can see an object (established as 2-feet above the pavement surface) in the roadway at the intersections. A grade correction factor should be applied to the calculated stopping sight distance requirements for “Road C” approaching “Road D” based on an 8 percent grade along “Road C”.

Given the extent of the regrading activities that will be required to provide the necessary sight lines from both “Road C” and “Road D”, it is recommended that the Applicant submit an affidavit from a Professional Engineer certifying that the required minimum sight lines are met at the Project site roadway intersections after the completion of the improvements. It is suggested that this requirement be included in any Decision that may be advanced for the Project.

### **Recommendations**

**Comment:** *The Applicant has agreed to conduct the RSA for the High Street/Ward Street/French Street intersection; however, the Applicant indicated that they cannot agree to implement the improvements that may result from the RSA since they are not defined at this time.*

*We recommend that the RSA be conducted by an independent consultant retained by the Applicant with experience in preparing RSAs, and that the RSA follow the MassDOT Road Safety Audit Guidelines. The RSA should be performed within 6-months of the issuance of a Comprehensive Permit for the Project, to the extent that the Zoning Board of Appeals (ZBA) is inclined to act favorably on the Application, with copies of the Draft and Final RSA to be provided to the ZBA, the Department of Public Works, the Town Engineer and the Police Department. Prior to the issuance of any Certificate of Occupancy for the Project, the Applicant shall either: i) design and construct the short-term improvements identified as a part of the RSA; or ii) provide funds (in an amount to be determined by the ZBA) to the Town to implement the short-term improvements.*

*Alternatively, the Applicant could conduct the RSA prior to the close of the public hearing process and then present a proposal to the ZBA to advance the improvements identified as a part of the RSA for consideration as a condition of the issuance of a Comprehensive Permit for the Project.*

*The Applicant has agreed to install traffic calming devices along Viking Lane to include a raised crosswalk and a speed hump in an effort to reduce vehicle travel speeds and the potential for cut-through traffic to use Autumn Circle. These accommodations should be reflected on the Comprehensive Permit Plan.*

*The Applicant’s engineer should also provide recommendations for safety enhancements that can be implemented within Autumn Circle that provide a similar level of accommodation for safety to that which is proposed for the residents of the Project.*



**Response:** The Applicant has agreed to conduct a Road Safety Audit (RSA) for the High Street/Ward Street/French Street intersection, but has not agreed to implement the improvements that may result from the RSA. **In the absence of a response from the Applicant to address the safety deficiencies at the High Street/Ward Street/French Street intersection, we recommend that the following condition be included in any Decision that may be advanced for the Project:**

**A Road Safety Audit (RSA) shall be performed at the High Street/Ward Street/French Street intersection following the MassDOT Road Safety Audit Guidelines and conducted by an independent consultant with experience in preparing RSAs retained by the Applicant. The RSA shall be performed within 6-months of the issuance of a Comprehensive Permit for the Project, with copies of the Draft and Final RSA to be provided to the ZBA, the Department of Public Works, the Town Engineer and the Police Department. Prior to the issuance of any Certificate of Occupancy for the Project, the Applicant shall either: i) design and construct the short-term improvements identified as a part of the RSA; or ii) provide funds (in an amount to be determined by the ZBA) to the Town to implement the short-term improvements.**

The revised *Comprehensive Permit Plan* included the addition of a speed table (“speed hump”) on “Road C” and proposed the reconfiguration of the cul-de-sac at the end of Autumn Circle to a modern roundabout, both of which are intended as traffic calming features to reduce travel speeds and cut-through traffic. **While we agree that the suggested measures will address vehicle travel speeds through the Project and reduce the potential for cut-through traffic, these features do not reduce the impact that will result from the proposed connection to Autumn Circle. The Applicant should propose additional traffic calming features, pedestrian improvements and other appropriate measures to address the increased traffic that will be using Autumn Circle.**

### **COMPREHENSIVE PERMIT PLAN**

**Comment 1a:** *The Applicant should consult with the Hingham Fire Department to determine if the primary response will be from High Street or Ward Street. If the response will be from High Street, a turning analysis should be performed for a vehicle entering at the High Street/Autumn Circle intersection and then proceeding to the Project site.*

**Response:** The Applicant’s engineer provided a truck turning analysis for the Hingham Fire Department design vehicle (Hingham Tower Truck) entering from Ward Street and exiting to Autumn Circle. **This response route should be confirmed by the Fire Department. No further response required.**

**Comment 2a:** *Expand the analysis to include turning maneuvers to/from Ward Street for each design vehicle. The curbline along both sides of Ward Street and the centerline pavement marking should be shown on the turning analysis.*



**Response:** The truck turning analysis has been expanded to illustrate the turning maneuvers from Ward Street with the curblineline and centerline shown. **A review of the turning analysis indicates that the fire truck will require the use of the full width of the Project site roadway when turning to/from Ward Street. As such, on-street parking would need to be prohibited (see comments regarding the school bus waiting area). No further response required.**

**Comment 3a:** *The fire truck turning analysis indicates that the bumper/ladder overhang will extend beyond the edge of the pavement in a number of locations. The Applicant should confirm that this is acceptable to the Fire Department and verify that no objects will be located in these areas that would inhibit fire truck maneuverability, including snow windrows.*

**Response:** The revised fire truck turning analysis indicates that portions of the fire truck design vehicle continue to cross the sidewalk area and will extend into individual driveways in order to circulate within the Project site. Further, the presence of on-street parking, which is common in residential neighborhoods, would inhibit emergency vehicle circulation in specific areas within the Project site. These conditions are directly related to the width of the Project site roadways. Accordingly and as stated in our prior comment letters, the Project site roadways should be increased in width to 24-feet. The *Comprehensive Permit Plan* should be revised accordingly or it is suggested that this be included as a condition of any Decision that may be advanced for the Project.

**Comment 4a:** *The turning analysis for the turnaround area between Buildings 16 and 17 indicates that the fire truck design vehicle cannot maneuver within the area that is provided. The Applicant's engineer should redesign the turnaround to comply with the requirements of NFPA® 1<sup>1</sup>.*

**Response:** The subject turnaround area has been removed. **No further response required.**

**Comment 2:** *We disagree with the Applicant's engineer and refer to the engineering standards cited in our original comment pertaining to roadway width and our comments noted herein with regard to the truck turning analysis. The roadways within the Project site should be widened to 24-feet. The Applicant's engineer should also indicate if changes are proposed to the cul-de-sac where the connection to Autumn Circle is proposed, and if traffic control devices are planned at the connection.*

**Response:** The Applicant's engineer continues to assert that the roadway design complies with the standards for a low volume roadway. As we have stated in our prior comment letters, **we disagree with the Applicant's engineer and have cited the applicable roadway design standards that apply to the Project. We recommend that the Project site roadways provide a traveled-way of 24-feet in order to accommodate: i) the turning and maneuvering requirements of emergency vehicles; ii) occasional on-street parking, particularly in the vicinity of Ward Street where parents may park while waiting**

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

for the school bus; and iii) parking maneuvers to/from the visitor parking areas. **The *Comprehensive Permit Plan* should be revised accordingly or it is suggested that this be included as a condition of any Decision that may be advanced for the Project.**

The revised *Comprehensive Permit Plan* proposes to reconfigure the cul-de-sac at the end of Autumn Circle to a modern roundabout in order to provide traffic control within the former cul-de-sac area and to serve as a traffic calming device to moderate travel speeds and reduce the potential for cut-through traffic. **In addition to our prior comments requesting that the Applicant propose measures to address the Project's impact to Autumn Circle, the Applicant should discuss how access to the residential homes abutting the roundabout will be impacted.**

**Comment 3:** *The Comprehensive Permit Plan indicates that sidewalks within the Project site will be 4-feet wide. The Public Rights-of-Way Accessibility Guidelines (PROWAG) requires that sidewalks that are less than 5-feet wide provide clear passing zones at intervals of 200-feet (maximum) that shall be 5-feet wide for a distance of 5-feet (R301.3.2). The Comprehensive Permit Plan should be revised to provide sidewalks that are a minimum of 5-feet wide or that comply with the PROWAG.*

**Response:** The revised *Comprehensive Permit Plan* now includes 5-foot wide sidewalks along one side of Viking Lane, "Road B" and "Road C", extending to Autumn Lane and Ward Street, with crosswalks and Americans with Disabilities Act (ADA) compliant wheelchair ramps provided at pedestrian crossing locations. The previously proposed 2-foot wide grass strip between the sidewalk and the edge of the traveled-way has been removed and sloped granite curbing is proposed.

**Typically, vertical granite curb is used when a sidewalk is adjacent to the traveled-way; however, sloped granite curb may be used in low speed environments. We defer to the Department of Public Works and the Town Engineer as to their preference. A sidewalk should be added along at least one side of "Road D" (preferably along the north side) and a marked crosswalk with accompanying ADA compliant wheelchair ramps should be provided for crossing "Road C" at "Road D". The sidewalk and crosswalk should provide access to the proposed mail kiosk.**

**Comment 7:** *Sight triangle areas should be shown on the Site Plans along with a note to indicate: "Signs, landscaping and other features located within sight triangle areas shall be designed, installed and maintained so as not to exceed 2.5-feet in height. Snow windrows located within sight triangle areas that exceed 3.5-feet in height or that would otherwise inhibit sight lines shall be promptly removed."*

**Response:** The sight triangle areas and requested note have been added to the revised *Comprehensive Permit Plan*. **No further response required.**

**Comment 8:** *A note should be added to the Site Plans stating: “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>2</sup>*

**Response:** The requested note has been added to the revised *Comprehensive Permit Plan*. **No further response required.**

**Comment 10:** *Driveways to individual units should be a minimum of 21-feet long measured between the garage door and the far edge of the sidewalk (edge closest to the residence) where a sidewalk is provided, and 23-feet measured between the garage door and the edge of the traveled-way in locations without a sidewalk.<sup>3</sup>*

**Response:** The Applicant’s engineer previously stated that the driveways will meet the indicated dimensions and typical driveway dimensions continue to be shown on the revised *Comprehensive Permit Plan*; however, **the driveways to the units along “Road D” and those serving Units 28 and 29 do not meet the stated criteria and should be revised accordingly and with consideration of the installation of a sidewalk along “Road D”.**

**Comment 11:** *A school bus waiting area should be provided at an appropriate location defined in consultation with the Town of Hingham School Department.*

**Response:** The Applicant’s engineer indicated that a 5-foot wide sidewalk has been provided to Ward Street. **To the extent that the Project site roadway is widened to 24-feet as requested, the additional roadway width combined with an ADA accessible sidewalk to Ward Street is appropriate for a bus waiting area. No further response required pending confirmation from the Applicant that the Project site roadways will be increased in width to 24-feet.**

**Comment 12:** **MUTCD compliant warning signs should be installed at and in advance of the “speed table”, and should be added to the *Comprehensive Permit Plan*.**

**Comment 13:** **The grade of “Road C” approaching Ward Street is approximately 8 percent. A leveling area with a grade of 2 percent or less should be provided for a minimum distance of 50-feet approaching Ward Street (measured from the STOP-line).**

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<sup>2</sup>*Manual on Uniform Traffic Control Devices (MUTCD)*; Federal Highway Administration; Washington, DC; 2009.

<sup>3</sup>NCHRP Report 659, *Guide for the Geometric Design of Driveways*; Transportation Research Board of the National Academies; Washington, D.C.; 2010.

## SUMMARY

VAI has completed a review of the supplemental latest materials submitted on behalf of River Stone, LLC in support of the proposed River Stone Condominiums to be located off Ward Street and Viking Lane on property shown on Assessors' Map 124, Lots 70-75 and 26, in Hingham, Massachusetts. This information was prepared in response to the comments that were raised in VAI's February 6, 2018 review letter and consisted of a letter dated March 9, 2018 and accompanying revised *Comprehensive Permit Plan* (revised through March 9, 2018), both prepared by McKenzie Engineering Group.

Based on our review of the supplemental information submitted by McKenzie Engineering Group in support of the Project, we are satisfied that the Applicant's engineer has been responsive to a number of our comments; however, the *Comprehensive Permit Plan* requires further refinement in order to demonstrate that access and circulation can be provided in a safe manner. We continue to recommend that the Project site roadways be increased in width from 20-feet to 24-feet in order to accommodate emergency vehicle access and circulation, on-street parking and maneuvering. In addition, the Applicant has not provided a commitment to implement safety improvements at the High Street/Ward Street/French Street intersection and has not advanced measures to address the Project's impact along Autumn Circle. We have provided suggested conditions for inclusion in a Decision to the extent that the ZBA is inclined to advance a Decision on the Application; however, **resolution of the roadway width may impact the number of residential units that can be accommodated within the Project site.** 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

*Professional Engineer in CT, MA, ME, NH, RI and VA*

JSD/jsd

cc: File