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DATE: February 3, 2022

TO: Keith Rondeau, Chairperson, Town of Seekonk Zoning Board of Appeals
Jeffrey S. Dirk, PE, PTOE, Managing Partner, Vanasse & Associates, Inc.
Lynne D. Sweet, Principal, LDS Consulting Group, LLC

FROM: Anna M. Novo, Sr. Traffic/Transportation Engineer, Caputo and Wick Ltd.

RE: Traffic Engineering Peer Review – Response to Comments
Greenbrier II – Cole Street, Seekonk, MA

Caputo and Wick Ltd. has reviewed the December 17, 2021, traffic engineering peer review correspondence prepared by Vanasse & Associates, Inc. (VAi), and we are pleased to offer the following responses as applicable. Please note that we have retained VAi's format and font for the review comments and have identified our responses in blue Calibri font for differentiation. Accompanying this correspondence are materials from the Traffic Impact Assessment (TIA) document that have been revised as a result of the peer review, as well as additional materials provided for clarification or in support of a response. The revised materials are comprised of the Sight Distance Plan, Circulation Plan, Crash Summary Table 3, Segment Crash Rate Worksheet, Capacity Analyses Summary Tables 7, 11 and 13, I-195 Ramps AM and PM Peak Hour Summary Sheets showing balanced volumes and associated operational analyses. Supplemental materials include Table 14 "Volume Data Evaluation", Table 15 "Volume Balancing Evaluation", Table 16 "Census Data Evaluation", Figure 13 "Existing and Proposed Pedestrian and Bicycle Accommodations", and the SU-30 Path Sweep Plan.

Below are VAi comments and our responses.

November 2021 TIA

T1: The data collection effort was undertaken following proper standards and methodologies. That being said, we are not in agreement with the methodologies that were used to establish the adjustments that were applied to the traffic count data. The Applicant's engineer should refer to MassDOT's guidance for Transportation Impact Assessments (TIAs) conducted during the COVID-19 pandemic. The traffic volume adjustment should be performed as follows:

1. Monthly traffic count data obtained from the closest MassDOT permanent count station to the study area should be reviewed in order to determine if a seasonal adjustment is required so that the collected data is representative of average-month conditions. It is customary to not reduce traffic counts if the data was collected during a month where traffic volumes are above average (such as August);

2. MassDOT considers 2019 traffic volume data to be representative of "Existing" conditions. As such, a comparison between August 2019 traffic volume data and August 2021 traffic volume data at the same MassDOT permanent count station that was used to determine the seasonal adjustment should be performed. This comparison will establish the COVID-19 adjustment factor that is to be applied to the peak-hour traffic volumes.

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3. Once the seasonal (if any) and COVID-19 adjustments are made to the raw traffic count data,the school adjustment factor should be considered, which was determined to be an additional 20 percent adjustment to the weekday morning peak-hour traffic volumes.

4. Finally, the adjusted traffic volumes should be balanced between the study area intersections where there are no intervening driveways or side streets that would add or remove traffic volumes from the roadway network (such as between the I-195 ramps). Traffic volume imbalances between intersections should be reviewed and adjusted as necessary.

Prior to the preparation of the TIA report, our office held discussions with the Town, the reviewer, and the Southeastern Regional Planning & Economic Development District (SRPEDD) office regarding the best approach to evaluate the existing data, given the impact of the COVID pandemic on the accuracy of any traffic data obtained after 2019.

As per discussions with the SRPEDD office regarding the MassDOT directive, it was their opinion that the use of the 2019 factors were intended to adjust counts completed in 2019 and that these factors could also be applied to counts obtained between 2014 and 2018 to represent 2019 volumes, but that no methodology was available at the moment to apply growth factors for counts taken after 2019 that would generate viable data. As such, we reviewed the MassDOT website for any spot counts that were conducted near the project site and concluded that traffic volumes had decreased by approximately 20% between 2019 (pre-COVID) and 2020. The counts we obtained in late August 2021 showed an increase of 17% from the counts we obtained in 2020. In evaluating the relationship between the 2021 and 2019 data, we felt that adjusting the 2021 counts by an additional 5% was sufficient to represent pre-COVID conditions.

However, in response to VAi comments 1 through 3 above, we obtained additional traffic count data from a MassDOT permanent counting station located in the Town of Swansea, approximately 9 miles from the proposed project site, since the two permanent stations within the Town of Seekonk did not have any available data for the time periods we needed. The data we obtained from the permanent station was utilized to determine if our adjustment of 5% was an adequate representation of pre-COVID conditions, and to determine if any further adjustment to the base 2021 data is warranted. Table 14 has been provided as supplemental material to summarize the results of the evaluation of these additional data. The results indicate that traffic volumes in August 2019 were approximately 3.7% higher than the traffic counts we obtained in August 2021. This suggests that our adjustment of 5% is conservative and should be acceptable. Additionally, the additional 15% added to the morning peak hour analysis should be more than adequate to account for any increase associated with school traffic.

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In response to VAi comment 4 above, we are aware that the traffic volumes are not balanced between most of the study area intersections that were evaluated, particularly in the segment of Fall River Avenue between the intersection of County Street and the I-195 WB Ramps. In this segment, numerous curb cuts are present, including commercial driveways (counting gas stations), the Seekonk Housing Authority, and several intervening side streets that provide access to multiple residential developments, all of which contribute to the traffic data imbalance found between the four counted intersections in this segment of Fall River Avenue.

However, in the segment between the I-195 Ramps, we have conducted a review of the traffic volume data obtained under the ATR count and of the data obtained under each ramp turning movement count (TMC). We have evaluated the imbalances between each ramp in relationship to the ATR data (both directions), as well as the imbalances between the two ramps. A summary of the imbalances under both evaluations and the resulting balance traffic data between the ramps is presented in Table 15 attached to this document.

Additionally, we have revised the Adjusted 2021 AM and PM Peak Traffic Volumes sketches for both I-195 Ramps to illustrate the changes, and as a comparison to the sketches provided in the TIA report. We also conducted new operational analyses for both peak periods utilizing the revised balanced traffic volumes. Both the operational analyses and revised sketches for the I-195 Ramps are included with this document. Results of the operational analyses show insignificant differences between the peak hour analyses of the unbalanced traffic volumes presented in the TIA report, and the balanced peak hour traffic volumes provided with this document.

T2: Vehicle travel speed data should be collected for Cole Street in the vicinity of the Project site drivewayfor a minimum of 48-hours (two consecutive weekdays) in order to ascertain the speed profile for the roadway and to determine the 85th percentile vehicle travel speed for the purpose of assessing sight distances at the driveway.

We are currently unable to obtain speed data along Cole Street. However, we have revised the intersection sight distance requirements based on the design speed of Cole Street (35 mph) rather than the posted speed (30 mph). Furthermore, the proposed driveway will operate under stop control. Based on these changes, the intersection sight distance requirements are as follows:

- Case B1 = Left Turn from Proposed Driveway = 390'
- Case B2 = Right Turn from Proposed Driveway = 335'
- Case F = Left Turn from Cole Street = 285'

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The proposed driveway has 400 feet of available sight line to the left of its intersection with Cole Street and 308 feet to the intersection of Cole Street and Route 114A, as well as across the intersection. We believe that vehicle speeds in this area will be greatly controlled by the proposed geometry of the Cole Street/Route 114A intersection.

T3: A description of existing and planned future pedestrian and bicycle accommodations for all study arearoadways and intersections should be provided. It is suggested that a graphic be prepared that shows the location of existing and proposed pedestrian facilities, including the location of cross walks and intersections that are under traffic signal control that currently include or will include pedestrian accommodations.

As requested, we have attached to this document a new sketch Figure 13 identifying all existing and proposed pedestrian and bicycle facilities, crosswalks, and existing and proposed traffic signals with pedestrian and bicycle accommodations located within the limits of the study area, which were also described in the TIA report.

T4: The motor vehicle crash analysis should be revisited using the revised existing condition traffic volumes. With the revised motor vehicle crash analysis, the following should be included:

1. Motor vehicle crash rate calculations should be provided for all study area intersections.

2. A summary table should be provided that includes the type of traffic control present (i.e., signalized or unsignalized), the calculated motor vehicle crash rate and the MassDOT Statewide and District 5 average crash rates.

3. The segmental crash analysis should not include the crashes at the intersections for which anintersection crash analysis is provided. Accordingly, the segmental analysis should be separated into distinct roadway segments between the study area intersections.

4. The Route 114A/Crossroads Convenience Store Driveways crashes should be added to the segmental analysis and a separate intersection crash analysis, while beneficial, is not requiredsince this intersection was not included in the traffic operations analysis and traffic counts for this location were not provided.

5. A review of the MassDOT statewide High Crash Location List should be completed in order to determine if there are any listed locations within the study area that are included on MassDOT's Highway Safety Improvement Program (HSIP) listing as a high crash cluster location.

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Regarding Item 1 - As discussed in our response to T1 above, the existing conditions traffic volumes do not require any further adjustments, and as such, the intersection crash rate worksheets and crash rate analyses presented in the Appendix section of the TIA report do not require any revisions, except for the segment crash rate worksheet.

Regarding Item 2 - We have revised Table 3 to only show the intersections along Fall River Avenue within the project study limits for which we obtained count data. Additionally, we have included the calculated crash rate for each intersection and identified the type of intersection (signalized or unsignalized) as requested.

Regarding Items 3 & 4 - We have revised the segment analysis to only include the small segment (610 feet) between the Cole Street intersection and the I-195 WB Off-Ramp to 114A NB (the area containing the Crossroads Convenience Store driveways). Accidents associated with this area are also summarized in revised Table 3, as well as the calculated segment crash rate. A revised segment crash rate worksheet and revised Table 3 are attached to this document.

Regarding Item 5 - We did conduct a review of the MassDOT statewide High Crash Location List, dated September 2020, and none of the project intersections are included in the current list. However, a Road Safety Audit was prepared for the intersection of County Street and Fall River Avenue back in September 2014, and based on the results of that audit, construction of the recommended short and mid-term mitigation measures was completed at the end of last year by MassDOT.

T5: The future No-Build traffic volumes should be revised to reflect the changes in the 2021 Existing peak-hour traffic volumes.

Based on our evaluation of the existing data as discussed in our response to comment T1, we believe that no revisions to the future No-Build traffic volumes as presented in the TIA report are necessary. However, we have revised the 2028 No-Build Conditions sketches for the I-195 Ramps with the balanced traffic volume data and conducted operational analyses for both peak periods. Similar to the existing conditions analyses, the results of the 2028 No-Build Conditions for the Ramps show insignificant differences between the balanced traffic volumes and the unbalanced traffic volume analyses presented in the TIA report.

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T6: U.S. Census Journey-to-Work data should be reviewed to validate the trip distribution pattern that was used for the Project and should be compared to the trip distribution pattern observed for Phase Iof the Greenbrier residential community.

We have reviewed the latest U.S. Census data available for the Town of Seekonk, as well as ease of access to major routes near the proposed site, and we have compared this information with the trip distribution patterns we observed during both the 2020 and the 2021 counting programs at the existing Greenbrier Development driveways. in addition, we have obtained 2019 rental data from the existing Greenbrier Development for comparison, and we believe that the trip distribution pattern presented in the TIA report closely represents the trip distribution pattern that will likely be generated by the proposed site. Table 16, attached to this document, provides a summary of the data.

T7: The Build condition traffic volumes should be revised to reflect the changes in the 2028 No-Build traffic volumes resulting from the refinement of the 2021 Existing traffic volumes. In addition, the trip assignment network should be reviewed and any imbalances between intersections should be corrected.

Based on our response to both T1 and T5, we believe that no revisions to the Build condition traffic volumes as presented in the TIA report are necessary. However, we have revised the 2028 Build Conditions sketches for the I-195 Ramps with the balanced traffic volume data and conducted operational analyses for both peak periods. Similar to the existing and no-build conditions analyses, the results of the 2028 Build Conditions for the Ramps show insignificant differences between the balanced traffic volumes and the unbalanced traffic volume analyses presented in the TIA report.

T8: The traffic operations analysis and associated summary tables should be updated to reflect the revised peak-hour traffic volumes (2021 Existing, 2028 No-Build and 2028 Build).

As indicated in our response to T1, T5, and T7 above we only conducted operational analyses for the I-195 Ramps. Capacity Analyses Summary Tables 7, 11 and 13 have been revised to show the results of these analyses, and for comparison to the original tables presented in the TIA report.

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T9: An assessment of both the stopping sight distance along Cole Street approaching the Project site driveway and the intersection sight distance for a motorist existing the driveway should be provided and performed in accordance with the standards of the American Association of State Highway and Transportation Officials (AASHTO)[3] and using the posted (or statutory) speed limit or the measured85th percentile vehicle travel speed along Cole Street at the Project site driveway, whichever is higher. To the extent that the sight lines cross private property or land that is not under the control of the Applicant, the Applicant should identify what measures or agreements have been or will be provided to ensure that objects are not placed within the sight triangle areas that would limit sight lines to andfrom the Project site driveway.

Based on field measurements, we believe sufficient stopping sight distance is present along Cole Street from both approaches to the proposed driveway. The required stopping sight distance (SSD) for a design speed of 35 mph is 250 feet, and the available stopping sight distance is greater than 300 feet. The required intersection sight distance (ISD) based on stop control on the proposed driveway approach is 390 feet for a left turn from the driveway, 335 feet for a right turn from the driveway and 285 feet for a left turn from Cole Street. The proposed driveway has 400 feet of sight distance to the left of the driveway and approximately 308 feet to the stop bar at the Cole Street/Fall River Avenue intersection, plus it extends across the intersection. Additionally, all lines of sight are across properties owned by the proponent, including the triangular lot at the Cole Street/Fall River Avenue intersection. The proponent will provide maintenance in these areas to make sure that the lines of sight are maintained.

T10: Pending resolution of the comments raised as a part of this review, the Applicant should review the Road Safety Audit (RSA) that was completed for the intersection of Route 114A at County Street in2014[4] and commit to the design and construction of the short-term improvements identified therein to the extent that they have not yet been completed.

At the end of last year, MassDOT completed the construction of the recommended short and mid-term mitigation measures outlined in the 2014 Road Safety Audit that was prepared for the intersection. The work included pedestrian and bicycle accommodations, new pavement, striping, signage, new signal equipment, utility pole relocation, sidewalks, etc. Any additional improvement that can be accommodated such as advance signage, share bike lane striping, etc. will be addressed with MassDOT during the development of construction drawings for the proposed Fall River Avenue mitigation.

T11: The Applicant should commit to the implantation of a Transportation Demand Management (TDM) program that is inclusive of the following elements:

- A transportation coordinator should be assigned for the Project to coordinate the TDM program;

- Information regarding public transportation services, maps, schedules and fare informationshould be posted in a central location and/or otherwise made available to residents;
- A "welcome packet" should be provided to residents detailing available public transportationservices, bicycle and walking alternatives, and commuting options;
- Pedestrian accommodations should be incorporated within the Project site and extend to the planned sidewalk along Cole Street (shown on the Site Plan);
- Secure bicycle parking should be provided consisting of both weather protected bicycle parking and exterior bicycle racks; and
- A central mail drop should be provided.

The implementation of a TDM program was included in the Final EIR for the Greenbrier Phase 1 development, so many of the elements listed above are already in place. Additionally, pedestrian accommodations are proposed to be provided internally for the new development and from the Springhouse Trail driveway to the Fall River Avenue intersection.

Site Plans

S1. A vehicle turning analysis should be provided using the AutoTurn© software for a single-unit truck (SU-30 design vehicle). The turning analysis should depict all maneuvers required to enter and exit the Project site, as well as those required to access the location for trash/recycling and service/loading and should demonstrate that the subject vehicle can access the Project site and circulate in an unimpeded manner.

A plan showing the turning radius analysis of a single-unit truck (SU-30 vehicle) circulating throughout the proposed site has been provided as supplemental material to the TIA original report and is included with this document.

S2: A STOP-sign and marked STOP-line should be added to the Project site driveway approach to Cole Street.

We have added a stop sign (R1-1) and stop-line to the "Sight Distance Plan." This information will also be added to the "Circulation Plan" and construction plans. The revised sight distance and circulation plans are included with this document.

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S3: Americans with Disabilities Act (ADA) compliant wheelchair ramps should be provided at pedestrian crossings within the Project site.

ADA compliant wheelchair ramps will be provided within the Project site and at any other location where it is applicable. A note has been added to the circulation plan, which is included with this document.

S4: A note should be added 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).[5]"

A note has been added to the circulation plan as requested.

S5. Bicycle rack(s) should be provided proximate to the community building, the playground and at otherappropriate location(s) within the Project site, with weather protected bicycle parking provided withinthe proposed buildings.

Bicycle racks will be provided throughout the site where feasible and appropriate.

S6. The sight triangle areas for the Project site driveway intersection with Cole Street should be shown 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 accumulation(windrows) located within sight triangle areas that exceed 3.5-feet in height or that would otherwise inhibit sight lines shall be promptly removed."

A revised sight distance plan that shows the sight triangle areas and the information requested has been included with this documentation.

S7. Consideration should be given to installing electric vehicle (EV) charging stations for use by residentsof the Project.

The proponent will consider the installation of electric vehicle charging stations if feasible for the site.