

November 6, 2023

NEX-2300312.00

Ms. Elizabeth Hughes, AICP, Town Planner
Town of Concord
Planning Division
141 Keyes Road
Concord, MA 01742

SUBJECT: NOVO Riverside Commons Comprehensive Permit Application
292-294 Baker Avenue
Peer Review Letter #1 – Traffic Review

Dear Ms. Hughes and Members of the Zoning Board of Appeals:

Greenman-Pedersen, Inc. (GPI) has performed a peer review of the of the materials submitted to the Concord Zoning Board of Appeals for the Proposed NOVO Riverside Commons Comprehensive Permit Application at 292-294 Baker Avenue. GPI is in receipt of following documents, which serve as the basis for our review:

- *Comprehensive Permit Application*, prepared by NOVO Riverside Commons, LLC; dated August 211, 2023
- *PEL Submission Set*, prepared by Beals and Thomas; revised July 31, 2023
- *Stormwater Management Report*, prepared by Beals and Thomas, dated September 19, 2023
- *Traffic Impact Assessment*, prepared by VHB; dated August 7, 2023
- *Traffic Memorandum, Proposed Commercial Development, Elm Street, Concord, MA*; prepared by Bayside Engineering; dated September 27, 2023

It is our understanding that the Applicant is in the process of revising the site plans and stormwater management report and will soon be providing new documents to the Town for review. As a result, this review focuses on only the *Traffic Impact Assessment* at this time. Additional comments on the site plans and stormwater analysis will be provided at a future date under separate cover.

As requested, GPI has reviewed the above materials for compliance with the applicable sections of the Town of Concord Zoning Bylaws, Massachusetts Department of Transportation (MassDOT) guidelines for traffic analysis, and general engineering practice. Based on our review, we offer the following comments for the Board's consideration:

Site Circulation, Access, and Egress

1. **GPI recommends that the Applicant install STOP signs and STOP lines for traffic exiting the site driveway onto Baker Avenue, as well as centerline markings on the site driveway between Baker Avenue and the entrance to the drop-off area at #292 Baker Avenue.**
2. **GPI recommends the Applicant install one-way arrows and signage, as well as STOP lines on the drop-off area exits at both #292 and #294 Baker Avenue.**
3. **There is currently no traffic control proposed at the internal intersection of the main drive aisle and the connection to #300 Baker Avenue. GPI recommends installing a STOP sign and STOP line on the #300 Baker Avenue driveway approach.**

4. Although there is a sidewalk proposed along the front of #292 Baker Avenue and a crosswalk to connect this sidewalk to #300 Baker Avenue, the sidewalk along the front of #292 Baker Avenue ends at this internal intersection and no crosswalks are provided across the #300 Baker Avenue approach to this internal intersection. **GPI recommends the Applicant consider extending the sidewalks to provide a more continuous pedestrian path through the site, connecting to the parking field just west of the fire lane. In addition, the Applicant should consider installing crosswalks on all approaches to the internal intersection. Consideration should be given to the implementation of traffic calming measures, such as a raised or texture intersection.**
5. The main drive-aisle through the site is proposed to be 24-feet wide with perpendicular parking on both sides of the roadway. There are no sidewalks or crosswalks proposed for people parking in the first 30 parking spaces on the east side of the driveway to access the building at #292 Baker Avenue. This area will experience the heaviest volume of traffic during the morning and afternoon when residents are traveling to/from and employees are traveling to/from the adjacent office development. The lack of pedestrian accommodations in this area is likely to result in pedestrians walking in the roadway between flowing traffic and backing vehicles exiting parked spaces, resulting in significant conflict in this area. **GPI recommends the Applicant consider elimination of the parking spaces closest to Baker Avenue and/or provision of safe pedestrian accommodations for residents walking to/from these spaces.**
6. The handicap parking spaces are proposed to be located within the drop-off areas, which are only 20 feet wide. Although the hatched area between the handicap parking spaces will provide some additional maneuvering spaces, vehicles may have difficulty entering and exiting these spaces, particularly the spaces near #294 Baker Avenue. **The Applicant should provide vehicle turning path diagrams to depict the path of vehicles entering and exiting the handicap spaces.**
7. **The Applicant should provide vehicle turning path diagrams depicting the access and circulation of emergency vehicles, delivery vehicles, and trash removal vehicles for the site.**
8. It appears that the Applicant is proposing to utilize the proposed public access trail for fire apparatus access to the buildings. **The Applicant should confirm that this is the case and demonstrate the ability of a fire apparatus to efficiently access and egress the public access trail.**

Traffic Impact Assessment

9. The description of the intersection geometry included on Page 3 of the TIAS for the Baker Avenue at Concord Meadows Driveway appears to be referencing a different intersection along Commonwealth Avenue and may have been inadvertently included from a previous report. GPI has reviewed the geometry of the intersection as analyzed in the capacity and queue analysis and determined that the intersection was adequately modeled. Although the Trashology driveway across the street from the Concord Meadows Driveway was not included in the analysis, there were no vehicles recorded entering or exiting the driveway during the peak hours of analysis. Therefore, the inclusion of the Trashology driveway would result in negligible impacts to the findings of the traffic operations analysis.
10. The proposed residential apartments will share access/egress with the adjacent office parking at #300 Baker Avenue; however, the Applicant has not included the intersection of Baker Avenue Extension / #300 Baker Avenue Driveway within the study area for the TIAS. **GPI recommends the Applicant update the TIAS to include this additional intersection.**
11. The Applicant has included the intersection of Main Street (Route 62) / Baker Avenue / Cottage Street in the TIAS. It is important to note that this intersection is located immediately adjacent to the Main Street (Route 62) intersections with Crest Street and Old Bridge Road. Due to their proximity and conflicting movements, the operations at both of these intersections are directly impacted by one another. The Applicant's trip distribution estimate indicates that this is also the area that will experience the greatest traffic increase as a result of the proposed residential development. **Therefore, GPI**

recommends that the Applicant include the Main Street (Route 62), Old Bridge Road, and Crest Street intersections within the study area for the TIAS.

12. **Due to the proximity of the proposed site driveway to the existing railroad crossing on Baker Avenue, the Applicant should review the safety and adequacy of the existing railroad crossing, include signage, signals, gates, pedestrian crossing, etc., and provide recommendations for any necessary enhancements.**
13. GPI concurs with the seasonal and annual adjustments utilized to project traffic volumes to 2030 No-Build conditions.
14. GPI notes that the public transportation section is referencing an old schedule for the Fitchburg Commuter Rail Line. Updating the schedule is not anticipated to impact the findings of the report.
15. The intersection of Concord Turnpike / Baker Avenue Extension experienced a crash rate above the statewide average and is categorized as a Highway Safety Improvement Program (HSIP) eligible high-crash cluster based on 2018-2020 crash records. A Road Safety Audit (RSA) was conducted for the intersection in February 2020, but was not provided in the appendix of the report. The TIAS included potential contributing factors and noted several potential measures to improve safety, such as signal timing modifications, improved signage and pavement markings, geometric modifications, and pedestrian and bicycle accommodations. However, the Applicant has not made any commitments to implement any of these safety enhancements. **Due to the history of safety issues at this location and the project's direct impact on the operations of the intersection, GPI recommends that the Applicant commit to implementing measures to reduce collisions and mitigate project impacts at this location.**
16. Although the crash rate for the Main Street (Route 62) / Baker Avenue / Cottage Street intersection is slightly below the statewide and District-wide averages, there is a high occurrence of angle and injury collisions at this location, as well as a high occurrence of peak-period collisions, indicating congestion may be a contributing factor. **The Applicant should review the collision patterns at this location and consider options for enhancing the safety of the intersection.**
17. The Applicant has not included traffic to be generated by the proposed mixed-use redevelopment of the former restaurant at #768 Elm Street within the projection of 2030 No-Build and Build traffic volumes. **GPI recommends that the Applicant update the analysis accordingly to include the traffic generated by this other development project to more accurately model the traffic operations at the Concord Turnpike (Route 2) / Baker Avenue Extension intersection.**
18. The trip generation estimate for the proposed residential development was prepared using Institute of Transportation Engineers (ITE) trip rate data for Land Use Code (LUC) 221 – Mid-Rise Multifamily Housing. GPI agrees with the use of ITE data for this land use code to estimate the trips generated by the proposed development.

However, the Applicant then applied the average vehicle occupancy (AVO) of 1.18 for residential trips obtained from the U.S. Department of Transportation¹ to determine the number of person trips generated by the development. and then used US Census Data on means of commuting travel for the local Census Block to convert the person trips back to vehicle trips. This effectively applied a reduction in vehicle trips generated by the proposed development for the use of nearby transit facilities. Application of the average vehicle occupancy rate to the ITE trip estimates will not result in an estimation of total person trips generated by the proposed development. Application of the AVO rate will only provide the total number of persons traveling in a personal / passenger vehicle as transit vehicles and those walking or bicycling to work are not accounted for within the AVO rate. The actual total person trips, when

¹ *Summary of Travel Trends: 2017 National Household Survey*; US Department of Transportation, Federal Highway Administration, Washington, D.C.; 2017.

considering transit, walking, biking, and work-from-home (WFH) trips would be higher than estimated using the AVO rate. Therefore, the trip generation estimate contained in the TIAS likely underestimates the vehicle trips to be generated by the proposed development. It is also noted that the ITE *Trip Generation Manual, 11th Edition* provides trip rates for LUC 221 (Multifamily Housing – Mid-Rise) for facilities located close to rail transit, as well as trip rates for person trips and walk, bike, transit trips. **GPI recommends the Applicant utilize this information to estimate the impacts associated with proximity to the commuter rail station rather than application of the AVO rate.**

19. The TIAS states that the Applicant based the distribution of site-generated vehicle trips on journey-to-work calculations. GPI agrees with this approach, however when looking at the distribution of traffic to/from Concord, GPI noticed the Applicant did not send any traffic down Cottage Street. Both the elementary and middle schools are located to the south of the site and trips between the site and the schools would likely use Cottage Street. In addition, Cottage Street provides a cut-through route to Old Marlboro Road for access to Route 117.
20. In addition, the Applicant has assumed that all traffic to/from downtown Concord and Bedford will utilize Route 62 instead of Elm Street. During the peak hours, when traffic on Route 62 and Route 2 are heavy, Elm Street can be a viable and faster route to/from these locations. **The Applicant should update the trip distribution to include this use of Elm Street and Cottage Street.**
21. The Synchro capacity and queue analysis for the Main Street / Cottage Street / Baker Avenue intersection was prepared assuming that the Cottage Street northbound (NB) approach allows right turns on red; however, right-turn-on-red is prohibited at this location. **The Applicant should update the Synchro analysis accordingly.**
22. The Concord Turnpike (Route 2) westbound (WB) channelized right-turn onto the Elm Street ramps was modeled in Synchro as a free movement; however, this movement is operating under YIELD control. **The Applicant should update the Synchro analysis accordingly.**
23. GPI notes that the travel speeds on every roadway link within the Synchro model were analyzed as 30 MPH; however, the posted speed on Baker Avenue and Baker Avenue Extension is 25 MPH and the posted speed along Concord Turnpike is 40 mph. As none of the intersections are part of a coordinated signal system, updating the travel speeds will have negligible impact on the operations of the study area intersections.
24. The Applicant has not provided an assessment of the adequacy of the proposed parking supply within the TIAS. **GPI recommends the Applicant prepare an assessment of the potential parking demand based on Town of Concord zoning regulations and ITE parking demand generation rates.**
25. The Applicant has proposed several Transportation Demand Management (TDM) measures to reduce single-occupant vehicle trips generated by the proposed development. In addition to the measures described in the TIAS, GPI recommends the Applicant consider the following additional TDM strategies:
 - a. One ride share parking space is proposed within the development. GPI recommends the Applicant provide one space per building, located near the main entrance to each building.
 - b. The Applicant should consider transit subsidies or rental reductions for residents utilizing the commuter rail.
 - c. The Applicant has proposed a 10-foot public access trail through a portion of the site. GPI recommends extending this trail further north to meet the future Assabet Trail.
 - d. The Applicant should consider parking strategies to reduce vehicle traffic, including restricting the available parking supply to one parking spaces per unit and/or charging fees for the use of parking spaces separate from rental fees.

- e. To reduce impervious space on the site, as well as parking maneuvers along the site driveway, the Applicant should consider strategies to share parking with the adjacent office development. These uses have opposite and complementary parking demand patterns where the office use will generate the greatest parking demand during the day on weekdays and the residential use will generate the greatest parking demand at night and on weekends. Sharing of parking between the uses could allow for a reduction in overall parking supply and the elimination of parking spaces located so close to the site driveway intersection with Baker Avenue, as well as internal intersections on site.
26. There is no sight line assessment provided within the TIAS, although the Applicant states in the Conclusion that sight distances will be maintained from the driveways. **GPI recommends the Applicant provide an assessment of the adequacy of the existing sight lines at both site driveway locations, as well as prepare a sight line plan to demonstrate the areas to be kept clear of vegetation, structures, or snow storage that may impede sight lines for vehicles exiting each site driveway. The sight line assessment should be based on the 85th percentile speeds along Baker Avenue and Baker Avenue Extension.**
27. The Applicant has concluded that the project will have minimal impact on the operations of the study area intersections and that no additional improvements are required to mitigate the impacts of the proposed development. GPI has provided several comments on the methodology and analysis prepared within the TIAS that led the Applicant to this conclusion. These comments will need to be addressed before GPI can provide a final determination on the project's impacts to the operations of the study area intersections and whether any additional mitigation measures, beyond those already recommended within this comment letter, will be required. Once these comments are addressed, GPI will provide a final letter summarizing our recommendations for mitigation measures associated with the proposed development.

Should you have any questions or require additional information, please contact me directly at (603) 374-7912 or by email to djordan@gpinet.com.

Sincerely,

GREENMAN-PEDERSEN, INC.



Rebecca L. Brown, P.E.
Senior Project Manager