TO: Joseph D. Peznola, P.E. Hancock Associates

FROM: Steven C. Findlen Keri Pyke, P.E., PTOE

Melissa Restrepo

SUBJECT: Transportation Peer Review

TRANSPORTATION PEER REVIEW 

DATE: January 23, 2024

HSH PROJECT NO.: 2024004.00

121 Grove Street, Franklin, Massachusetts

As requested, ***Howard Stein Hudson (HSH)*** conducted a peer review of the materials prepared for the proposed residential development located at 121 Grove Street (the Project) in Franklin, Massachusetts. Our evaluation is based on the following documents:

⬛ *Transportation Impact Assessment, Proposed Residential Development 121 Grove Street, Franklin, Massachusetts (TIA),* prepared by Vanasse & Associates, Inc. (VAI), October 2023; and

⬛ *Grove Street Residences 121 Grove Street – Franklin, MA Plan Set,* prepared by RJO’Connell & Associates, Inc. (RJOC), December 18, 2023.

The existing site consists of a single-family home with two curb cuts onto Grove Street. The proposed Project would involve the removal of the existing home and the construction of five residential buildings with approximately 330 units and a clubhouse. The Project will also provide 507 parking spaces.

The purpose of this review is to ensure that the study analysis conforms to industry standards as well as the Town of Franklin Zoning Bylaws, is applicable to the study area and region, and addresses the traffic and transportation concerns of the Town of Franklin Zoning Board of Appeals (ZBA). The key findings of our review of these documents are summarized and presented in the following sections. The comments are organized by the same headers provided in our outlined scope of services.

**Scope of Review**

The following issues were reviewed as part of our approved scope of services:

⬛ Study Area Boundaries ⬛ Traffic Data Collection ⬛ Selection of Peak Hour

⬛ Motor Vehicle Crash Data No-Build Condition

⬛ Off-site Roadway Projects

⬛ Trip Generation

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⬛ Site Trip Distribution and Assignment ⬛ Traffic Operations Analysis

⬛ On-Site Planning and Parking

⬛ Pedestrians/Cyclists

⬛ Geometric Design Criteria

**Existing Conditions**

**STUDY AREA BOUNDARIES**

⬛ Site Improvements

⬛ Transportation Demand Management (TDM)

⬛ Construction Period Issues

The Applicant defined that the study area consists of the major roadways that provide access to the Project and intersections that are expected to accommodate the majority of the Project-related vehicle trips. The study area includes the following six intersections:

⬛ Route 140/Grove Street/West Central Street;

⬛ Route 140/I-495 Southbound ramps;

⬛ Route 140/I-495 Northbound ramps;

⬛ Grove Street/Beaver Street;

⬛ Beaver Street/Route 140; and

⬛ Grove Street/Washington Street.

***HSH Comment: HSH generally agrees with the study area roadways and intersections. Aerial imagery was used to verify the roadway and intersection geometries provided by the Applicant. No further action required.***

**TRAFFIC DATA COLLECTION AND ADJUSTMENTS**

The Applicant conducted manual turning movement counts (TMCs) on Wednesday, June 28, 2023, during the weekday morning (7:00 – 9:00 a.m.) and weekday evening (4:00 - 6:00 p.m.) peak periods. The Applicant reviewed the Massachusetts Department of Transportation (MassDOT) weekday seasonal factors for Urban Groups 3 (other principal arterials) and determined that the June traffic volumes are above average month conditions; therefore, the traffic volumes were not adjusted. Additionally, the Applicant stated that MassDOT no longer requires pandemic-related adjustments to traffic counts after March 2022, except in locations where the predominant land uses consist of office space or similar uses; therefore, no pandemic-related adjustments were necessary.

***HSH Comment: HSH generally agrees with the traffic data collection and adjustments methodology. No further action required.***

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**SELECTION OF PEAK HOUR**

The Applicant studied a weekday morning peak period of 7:00 – 9:00 a.m. and a weekday evening peak period of 4:00 – 6:00 p.m. The peak hours using this data were generalized to be 8:00 – 9:00 a.m. for the weekday morning peak hour and 4:15 – 5:15 p.m. for the weekday evening peak hour.

***HSH Comment: HSH agrees with the Applicant’s selection of peak hour. No further action required.***

**MOTOR VEHICLE CRASH DATA**

The Applicant conducted a motor vehicle crash analysis for the study area intersections with data provided by the MassDOT Safety Management/Traffic Operations Unit for the most recent five-year period available (2016-2020), and a summary table was provided in the TIA. The majority of the crashes were angle-type crashes, rear-end type crashes, and sideswipe-type crashes. The study area intersections experienced an average of five or fewer reported motor vehicle crashes per year over the five-year review and were observed to be lower than the MassDOT District 3 crash rates for signalized and unsignalized intersections.

***HSH Comment: The Applicant completed the motor vehicle crash analysis following industry standards. HSH agrees with the results provided in the TIA. No further action required.***

**Future Conditions**

**NO-BUILD CONDITION**

The Applicant explains the methodologies to estimate non-site traffic growth: the most frequently used procedure consists of estimating an annual percentage increase and applying it to the study area traffic volumes and a second procedure, which consists of estimating traffic generated by planned developments that would be expected to affect the Project study area roadways. The Applicant asserts that for this TIA both procedures were used.

Traffic volume data from MassDOT permanent count stations and historic traffic counts in the area were reviewed in order to determine general background traffic growth trends. Based on this review, the Applicant used 1% per year compounded annually to account for future traffic growth including any unforeseen development within the study area.

The Applicant consulted with the Town of Franklin to determine if there were any specific planned or approved development projects that would influence future traffic volumes in the study area.

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Based on those discussions, no development projects are planned within the study area, and therefore, no additional growth was applied.

***HSH Comment: HSH generally agrees with the Applicant’s methodology in determining background traffic growth and specific planned development traffic. No further action required.***

**OFF-SITE ROADWAY PROJECTS**

The Applicant consulted with the Town of Franklin and MassDOT to determine if there are any roadway improvement projects proposed in the vicinity of the study area. Based on those discussions, there are no roadway improvement projects planned within the study area.

***HSH Comment: HSH agrees with the Applicant’s determination that no roadway projects are being proposed in the vicinity of the site. No further action required.***

**TRIP GENERATION**

To estimate the site-generated traffic for the proposed development, the Institute of Transportation Engineers’ (ITE’s) *Trip Generation, 11th Edition* was utilized based on Land Use Code (LUC) 221 – Mid-Rise Residential. The Applicant estimates a total of 134 vehicle trips (31 entering and 103 exiting) during the weekday morning peak hour and a total of 129 vehicle trips (79 entering and 50 exiting) during the weekday evening peak hour.

***HSH Comment: Based on the trip generation provided in the Appendix, the Applicant used the fitted curve to estimate the trip generation trips, which provides a higher estimate than the average rate. This results in a conservative analysis of new trips. No further action required.***

**TRIP DISTRIBUTION AND ASSIGNMENT**

The TIA asserts that the trip distribution was developed based on a review of existing travel patterns at the study area intersections and U.S. Census Data. Based on this assessment, most of the site traffic is expected to come from and head to I-495, with 33% to/from I-495 north and 26% to/from I-495 south. Additionally, 7% is expected to come from and head to Beaver Street, 16% come from and head to Route 140 east and 5% come from and head to Route 140 west, and 5% come from and head to Washington Street east and 8% come from and head to Washington Street west.

***HSH Comment: Although HSH generally agrees with the trip distribution methodology, the Applicant did not specify which census data was used to develop the trip distribution. HSH***

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***requests the Applicant provide more information on the census tract and year that was used.***

**TRAFFIC OPERATIONS ANALYSIS**

To assess the potential traffic impact of the development on the adjacent traffic network, the following steps are involved:

⬛ Determine existing volumes and analyze existing traffic operating conditions for the study intersections;

⬛ Generate and analyze No-build traffic volumes by applying a background growth factor to the existing traffic volumes and adding approved/pending developments as well as planned transportation improvements, if any, and analyze traffic operations;

⬛ Determine the traffic volumes to be generated by the proposed development; ⬛ Distribute and assign traffic throughout the study area network; and

⬛ Combine the background traffic volumes with the proposed traffic volumes to establish Build traffic volumes, analyze traffic operations, and identify mitigation of potential impacts.

The traffic operations analysis presents detailed measures of effectiveness (MOEs) to assess the operating characteristics of the study intersections. The MOEs reported are average vehicle delay, level of service (LOS), volume-to-capacity (v/c) ratio, and queue lengths. The LOS is a letter grade that is assigned to a range of vehicular delays at the intersection. LOS A represents little delay and is usually associated with low volume movements. LOS F represents higher delays and could indicate issues related to traffic congestion.

The Applicant used Synchro traffic engineering software to analyze all the intersections in the network. Synchro engineering software is an industry standard that allows engineering practitioners to model traffic operations based on various inputs such as traffic volumes and traffic control devices (stop signs, traffic signals, etc.). As shown in the analysis, the Project will generally result in minimal impact to motorist delays and vehicle queue lengths at the study area intersections.

***HSH Comment: HSH generally agrees with the traffic operations analysis. Additionally, HSH agrees with the overall conclusion that the Project is not expected to impact intersection operations significantly and that the increase in delay/queues over the No build conditions will be minimal. No further action required.***

**ON-SITE PLANNING AND PARKING**

The Applicant asserts that the proposed development will provide a total of 507 parking spaces for 330 residential units, resulting in a parking ratio of 1.54 space per residential unit.

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***HSH Comment: The TIA states 507 parking spaces will be provided while the Overall Site Plan prepared by RJOC shows a total of 574 parking spaces. HSH request the Applicant confirm the final proposed parking space count.***

***HSH recognizes that the proposed number of parking spaces is below the Town of Franklin’s parking requirements of Article V Special Regulations, § 185-21 Parking, which states that residential buildings outside of the Downtown Commercial and Commercial I Zoning Districts, shall provide two parking spaces per unit, regardless of the number of bedrooms. HSH requests the Applicant provide a breakdown of the number of units per building to confirm if the number of parking spaces provided is adequate for each building and confirm if the Project is meeting its parking demand.***

Vehicular access to the Project will primarily be provided through a new driveway on Grove Street. Within the site, each building and corresponding parking areas will be accessed through their own driveway, each accessed from the two main internal circulating roads. Each building will also provide access to the trash areas.

***HSH Comment: HSH generally agrees with vehicular access and internal circulation. However, the Applicant does not provide much information on loading and trash/recycling accommodations. HSH requests the Applicant provide a detailed plan as to where move in/move-out activity will take place at each building, including a full AutoTURN analysis to demonstrate that all anticipated vehicles (moving trucks, delivery trucks, and trash/recycling trucks) can safely access each building and will not block the driveways and drive aisles while parked.***

**PEDESTRIANS/CYCLISTS**

The Applicant provides no information on pedestrian and cyclists accommodations in the TIA and limited information on the site plans prepared by RJOC.

***HSH Comment: HSH requests the Applicant provide more pedestrian accommodation details including Americans with Disabilities (ADA) ramps throughout the site. Additionally, HSH requests that the Applicant confirm if any bicycle accommodations will be provided, including but not limited to, secure bicycle storage for residents and outdoor bicycle racks for visitors.***

**GEOMETRIC DESIGN CRITERIA**

The Applicant conducted a sight distance evaluation at the Site driveway intersection with Grove Street. To maintain a safe operation of an unsignalized intersection, Intersection Sight Distance

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(ISD) only needs to be equal to the Stopping Sight Distance (SSD), though it is desirable to meet ISD requirements on its own. The Applicant utilized the posted speed of 40 miles per hour (mph) to calculate the required SSD and ISD. Based on this evaluation, the required SSD is 305 feet for vehicles approaching from both north and south, and the recommended ISD is calculated at 445 feet on the future exiting approach, looking left. The Applicant’s field-measured distances exceed the required SSD, with 481 feet from the north and more than 500 feet from the south. The ISD looking north, a left turn from the site driveway, does not meet the recommended distance but it does exceed the required SSD. The Applicant concludes the driveway operations meet the SSD and ISD requirements.

***HSH Comment: HSH generally agrees with the Applicant’s geometric design criteria; however, based on the sight distance plan provided in the Plan Set, Sheet C-4A Parking and Traffic Control Plan, the sight distance measurement point was located at the rear edge of the proposed crosswalk. HSH requests the Applicant prepared an adequate sight distance plan, showing the appropriate location of the vehicle, which should be behind the proposed stop line, and recalculate the intersection sight distances.***

***HSH reviewed the fire truck maneuvers provided as part of the Plan Set, Sheet FT-1. HSH requests the Applicant include the maneuvers of the fire truck entering the site from the north (making a right-turn from Grove Street into the site) and provide the exiting maneuvers (left- and right-turn onto Grove Street from the site). Additionally, the Applicant should provide AutoTURN analysis to demonstrate that all anticipated vehicles (large passenger cars, delivery trucks) can enter and exit the proposed site driveway. Large passenger vehicles should include a full-size SUV and delivery vehicles should include a moving truck as well as trash/recycling truck.***

**SITE IMPROVEMENTS**

The Applicant is proposing the main driveway be place under STOP sign (MUTCD R1-1) control, with a painted STOP bar included. All signs and other pavement markings to be installed will conform to the applicable standards of the current *Manual on Uniform Traffic Control Devices (MUTCD),* signs and landscaping adjacent to the Project site driveway will be designed and maintained as to not restrict lines of sight, and snow windrows within sight triangle areas of the Project site driveway will be removed as to not impede sightlines.

***HSH Comment: HSH generally agrees with the proposed site improvements; however, the TIA does not explicitly commit to providing ADA-complaint wheelchair ramps at all proposed crossings within the Project site. The Parking and Traffic Control Plans, prepared by RJOC, show the location of the crosswalks, but no wheelchair ramps are***

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***shown on any of the plans. HSH request the Applicant provide the appropriate wheelchair ramps at all crossing locations.***

**TRANSPORTATION DEMAND MANAGEMENT (TDM)**

The Applicant asserts that in effort to encourage the use of alternative modes of transportation to single-occupant vehicles, the following TDM measures will be implemented:

⬛ Property management team will provide a “welcome packet” for residents and employees detailing available public transportation services, bicycle, micro-mobility devices, walking alternatives, and available commuter options;

⬛ Property management team will make available public transportation schedules which will be posted in a centralized location for residents;

⬛ Property management team will identify car/vanpool resources that may be available to residents. This information will be posted in a centralized location for residents, employees, and visitors. The project may be able to coordinate with GATRA GO, since their on-demand service provides vehicles with seating for 9-10 people; and

⬛ Property management team will provide information on available pedestrian and bicycle facilities in the vicinity of the Project site.

***HSH Comment: HSH generally agrees with the proposed TDM measures but encourages the Applicant to consider additional TDM measures, including a vehicle sharing program with dedicated parking spaces on-site for services like Zipcar to reduce single-occupancy vehicle trips to and from the Site. The TIA does not explicitly state whether a transportation coordinator will be designated to coordinate elements of the TDM program and help with the loading/servicing activities. HSH requests the Applicant to clarify if a transportation coordinator will be designated. As there are more and more hybrid electric and fully electric vehicles on the roads, we recommend that the Applicant explore the feasibility of constructing electric-vehicle (EV) ready parking spaces.***

**CONSTRUCTION PERIOD ISSUES**

The Applicant provided a Demolition and Erosion Control Plan, Sheets C-1A and C-1B, of the Plan Set prepared by RJOC. However, it does not provide details on any anticipated construction period issues.

***HSH Comment: HSH encourages the Applicant evaluate the short-term construction impacts of the Project, provide details of the overall construction schedule, working hours, number of construction workers, worker transportation and parking, number of construction vehicles, and routes to and from the Project site. To minimize transportation***

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***impacts during the construction period, HSH suggests the Project proponent limit the number of construction worker parking spaces on-site and encourage workers to carpool and secure spaces on-site for workers’ supplies and tools.***

If you have any questions or require further information, please feel free to contact us.

Sincerely, 



Steven C. Findlen

Manager, Bridgewater Office

Keri Pyke, P.E., PTOE Principal

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