



Memorandum

To: Ms. Rebecca Curran Cutting
Town Planner
Town of Marblehead, Abbot Hall
188 Washington Street
Marblehead, MA 01945

Date: 10/5/2022

Project #: 15806.00

From: Michael A. Santos, PE, PTOE
Vinod K. Kalikiri, PE, PTOE

Re: Proposed Multi Family Residential Development
202-204 Tedesco Street – Marblehead, Swampscott, and Salem, MA
Transportation Peer Review

On behalf of the Towns of Marblehead and Swampscott, VHB conducted an independent peer review of the Traffic Impact Assessment (TIA) prepared by Vanasse & Associates, Inc. (VAI) dated November 2021 and the traffic circulation elements of the Preliminary Site Plan Documents prepared by Bohler Engineering dated July 15, 2022 for a proposed Multi Family Residential Development located at Vinnin Square in the Towns of Marblehead, Swampscott and Salem, Massachusetts.

The purpose of this review is to verify that the traffic analysis conforms to industry, local, and state standards, that the traffic study methodology is appropriate for the Project setting, and to determine the appropriateness of any recommended mitigation to adequately address potential project impacts. The traffic focused review of the Site Plan identifies specific transportation elements such as parking, vehicular circulation, loading and service operations, site access, and traffic control within the site and at intersections with the public roadway network.

As presented in the material reviewed by VHB, the Project consists of the construction of a 140-unit multifamily residential development that will be located on the southeast corner of the intersection of Vinnin Street and Salem Street. A total of 237 parking spaces are proposed, including 164 surface spaces and 73 garage spaces. The site is partially located within the communities of Swampscott, Marblehead, and Salem. The site is bisected by the Swampscott/Marblehead town line, with a small portion of the site along Vinnin Street located within the City of Salem. The site currently contains several commercial buildings that will be removed as part of the Project.

The key findings of our review of the TIA and the Site Plan Documents are presented in the following sections. VHB's comments and recommendations are identified and numbered throughout the document.

Scope of Review

The following topics were reviewed:

- › Study Methodology
- › Existing Traffic Volumes
- › Pedestrian, Bicycle, and Public Transportation Facilities
- › Motor Vehicle Crash Analysis
- › No-Build Traffic Volumes
- › Trip Generation
- › Trip Distribution
- › Build Traffic Volumes
- › Traffic Operations Analysis
- › Sight Distance Evaluation

- › TIA Recommendations
- › Parking and Site Plan traffic review

Study Methodology

The traffic analysis provided in the TIA presented an evaluation of existing conditions (year 2021) and future conditions projected to a seven-year time horizon (year 2028) with and without the Project. The study area consists of four signalized intersections that comprise the Vinnin Square area of Marblehead, Swampscott, and Salem. The proposed driveways were also evaluated as part of the future conditions scenarios.

1. The study methodology is consistent with the MassDOT guidelines for traffic impact assessment.
2. The primary impacts of the Project will be within Vinnin Square and along the connecting roadways in Marblehead, Swampscott, and Salem. The selected study area is adequate based on the expected Project impacts. Traffic impacts at the entrances and exits to the study area network are 13 vehicles per hour or less, which represents under one percent of the total volumes for each location except for Salem Street to the south, which experiences a 1.4 percent increase in trips due to the Project.

Existing Traffic Volumes

Traffic data was collected in August 2021 at each study area location by conducting turning movement counts (TMCs) during the peak commuter periods (7-9 AM and 4-6 PM). Automatic traffic recorders (ATRs) were also used to collect daily traffic volumes and vehicular speeds along Vinnin Street and Salem Street. The Applicant stated that to account for seasonal fluctuations and the impact on traffic volumes due to the COVID-19 pandemic, traffic volumes from MassDOT Continuous Count Station No. 5080 on Interstate 95 in Lynnfield were reviewed and that adjustments to the traffic counts were not required. The measured 85th percentile vehicular speeds on Salem Street were 22 miles per hour (mph) in the northbound direction and 26 mph in the southbound direction. The measured 85th percentile vehicular speeds on Vinnin Street were 29 mph in the eastbound direction and 28 mph in the westbound direction.

3. The data was collected during typical commuter peak periods on a weekday in August. These time periods represent the peak commuter periods of the study area and the Project. The vehicular speeds measured on Salem Street and Vinnin Street. The time periods evaluated in the TIA are appropriate. The 85th percentile vehicular speeds are used for sight distance measurements, which is reviewed later in this memorandum.
4. The Applicant did not provide data or information related to MassDOT Continuous Count Station No. 5080, or the applicability of Interstate data to determine the adequacy of data on local streets. Specifically, the study does not include adequate information, following the then applicable MassDOT protocols, for justifying the adjustments to the 2021 traffic counts to account for the impacts of the COVID-19 pandemic. VHB requests that the Applicant provide the data that was used to determine that adjustments to the 2021 counts were not required. Due to the nature of the varying impacts of the COVID-19 pandemic on regional highways and local roads, VHB also requests that the Applicant conduct research to determine if there are any record traffic counts within Vinnin Square or on roadways in Swampscott, Marblehead, or Salem that can be used to determine the impacts of the COVID-19 pandemic on the local roadways, following the applicable process recommended by MassDOT for data collected before March 2022. Should the Applicant find that pre-pandemic volumes on local roadways are higher than volumes in 2021, additional adjustments should be applied to the count data and the affected analyses revised.

5. A comment related to the month in which the traffic data was collected was raised at the September 13, 2022 Planning Board hearing. The comment noted that traffic volumes during the holiday season (November through December) may be higher based on anecdotal experience. It is VHB's understanding that the Applicant agreed to review seasonal traffic data. VHB recommends that the Applicant either collect new ATR counts in December 2022 on Vinnin Street and Salem Street at the same locations of the August 2021 count and report on the findings of the data comparison. If there are significant differences (greater than 10%) in critical intersection volumes between August 2021 and December 2022, prepare a supplemental traffic operations analysis with the higher traffic volumes. If deemed appropriate, the Applicant should identify improvement measures to address additional impacts caused by the Project. Should the towns vote on the project prior to the collection and analysis of such supplemental data, submission of the findings could be included as a condition for approval.

Pedestrian, Bicycle, and Public Transportation Facilities

The Applicant provided a description of pedestrian, bicycle, and public transportation facilities that serve the Project site. The Applicant noted that sidewalks are provided along all study roadways and that crosswalks are provided at the study intersections that include pedestrian traffic signal equipment. The Applicant noted that bicycle facilities are not present within the study area, but that the roadways have sufficient width to accommodate shared vehicle/bicycle travel. The TIA identifies nearby public transportation services, which are provided by the Massachusetts Bay Transportation Authority (MBTA) bus services.

6. VHB conducted a site visit to determine the condition of the existing transportation network including pedestrian, bicycle, and public transportation. VHB noted that many of the pavement markings including the crosswalks within the study area are faded and lack visibility for oncoming traffic. Crosswalks at the intersections of Vinnin Street at Paradise Road and Vinnin Street at Salem Street consist of two parallel lines that are partially faded. A crosswalk is not provided across the east leg of the intersection of Vinnin Street at Salem Street, which is one of the primary points of pedestrian access for the Project. It is likely that future residents of the Project will cross between the site and the retail plaza and the existing bus stop on the north side of Vinnin Street and a crosswalk between the two properties is lacking. The crosswalk and curb ramps on Salem Street south of Sunbeam Lane also appear to be deficient. VHB recommends that the Applicant identify nearby bus stops and availability of bus shelters, existing deficiencies and gaps in connectivity, planned improvements to the facilities as part of other projects, and how the on-site pedestrian facilities would connect to the system. The narrative accompanying the graphic should discuss how residents at the proposed development could travel through the area by bicycle and any related constraints and opportunities within the area transportation. Connections between the site and major destinations in the area should also be highlighted.
7. Where appropriate, recommendations for improving the existing deficient pedestrian related signage, crosswalks and curb ramps within the study area and of the potential for installing new crosswalks, curb ramps, and pedestrian signal equipment on the east leg of the intersection of Vinnin Street at Salem Street by the Applicant should be discussed. The locations identified for such upgrades by the Applicant should be discussed with the Planning Departments and Departments of Public Works in Marblehead and Salem for their input and concurrence. Where appropriate, upgrades to crosswalks should consider continental-style pavement markings (subject to town standards) to improve visibility for approaching vehicles. All new signage

and pavement markings should conform to the requirements of the latest version of the Manual of Uniform Traffic Control Devices (MUTCD).

Motor Vehicle Crash Data

The Applicant provided an evaluation of motor vehicle crash data obtained from MassDOT for the years 2014 – 2018 to investigate crash trends within the study area. The evaluation indicates that a total of 50 crashes occurred in the study area during this time period, with the highest prevalence of crashes occurring at the intersection of Vinnin Street at Paradise Road. The Applicant compared crash rates at each intersection to both the MassDOT District 4 and statewide averages for similar intersections and indicated that crash rates within the study area are below average. A review of MassDOT data also indicated that there are no locations within the study area that are listed as a Highway Safety Improvement Program (HSIP) eligible location.

8. The Applicant conducted the crash evaluation consistent with standard traffic engineering practice. Since the submission of the TIA, MassDOT added complete data from 2019 to their crash database. VHB requests that the Applicant include MassDOT crash data from 2019 in the analysis and identify if there are any changes to the crash trends at the study area intersections. If crash rates for any locations exceed the District average crash rates, preparation of collision diagrams is recommended to identify any prevalent crash patterns and trends.

No-Build Traffic Volumes

The Applicant developed future 2028 No-Build traffic volumes by applying a one percent annual growth rate to the 2021 Existing traffic volumes and adding traffic expected to be generated by a multifamily residential development at 602 Loring Avenue in Salem. The TIA also identified projects at 1 Elm Street and 149-169 Humphrey Street but did not include traffic from those projects due to the relatively low impact at the study area intersections. The TIA stated that there are no planned roadway and traffic improvements within the study area based on information provided by the Towns of Marblehead and Swampscott, the City of Salem, and MassDOT.

9. The Applicant developed the 2028 No-Build traffic volumes using methods consistent with standard traffic engineering practice. Based on the Applicant's response to Comment 4, the 2028 No-Build traffic volumes should be updated accordingly.
10. VHB recommends that the Applicant confirm that there are no planned development or roadway/intersection projects that have been proposed since the submission of the TIA that needs to be incorporated into the analyses.

Trip Generation

The Applicant estimated the trips generated by the project based on data provided in the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 11th Edition, using Land Use Code (LUC) 221 - *Multifamily Housing (Mid-Rise)*. The Applicant also provided information related to mode share based on data from the United States Census' American Community Survey (ACS) for the two census tracts in which the Project site is located to determine non-vehicular trips generated by the Project. Based on the ACS data, the Applicant assumed that 87 percent of trips were made by vehicle, 9 percent by transit, and 4 percent by walking or cycling. The TIA states that the Project is expected to generate 554 daily vehicle trips, with 45 weekday morning peak hour trips and 48 weekday evening peak hour trips.

11. The Applicant used data based on the *Trip Generation Manual* using LUC 221 – Multifamily Housing, which is the appropriate LUC for this Project. The Applicant did not provide a discussion of trips related to the existing uses on the site. VHB recommends that the Applicant comment on the trip generation for the existing uses on the site.
12. The Applicant noted that 9 percent of the existing trips in the two US Census tracts nearest the site use public transportation for commuting purposes. While the Project may experience similar transit usage as the surrounding census tracts, the data does not differentiate between transit trips by commuter rail or bus. Commuter rail trips may require residents to drive to the commuter rail station in Swampscott or Salem, which will still create vehicular trips related to the site but would be identified in the ACS as transit trips for commuting purposes. VHB recommends that the Applicant provide updated trip generation estimates without the credit for transit trips and a comparison with the estimates presented in the TIA. The Applicant should provide a narrative on how this will impact the traffic analyses and conclusions of the study.

Trip Distribution

The estimated peak hour Project-generated trips were assigned to the study area intersections based on Journey-to-Work (JTW) data for residents living in the Towns of Marblehead and Swampscott. Based on this evaluation, the trips were distributed throughout the study area. Approximately 18 percent of the trips are oriented to/from Marblehead on Tedesco Street, 15 percent to/from the south on Salem Street, 25 to/from the south on Paradise Road, 18 percent to/from the south on Loring Avenue, and 24 percent to/from the north on Loring Avenue.

The Project will provide a full-access driveway on the east side of Salem Street and a full-access driveway on the south side of Vinnin Street. The TIA shows that the Salem Street driveway will serve 49 percent of the Project trips and the Vinnin Street driveway will serve 51 percent of the Project trips.

13. The usage of JTW data is the appropriate method to develop trip distribution patterns and is consistent with standard traffic engineering practice. The trip distribution patterns are reasonable and reflect future commuting patterns expected for the Project.

Build Traffic Volumes

The Applicant added the expected Project-generated trips to the No-Build traffic volumes to develop the 2028 Build traffic volumes.

14. Based on the Applicant's response to Comments 4, 8, and 9, the 2028 Build traffic volumes should be updated accordingly.

Traffic Operations Analysis

The Applicant conducted a traffic operations analysis for the existing conditions, the 2028 No-Build conditions, and the 2028 Build conditions. The operations analysis presented an evaluation of vehicular delays, queues, volume-to-capacity ratios, and levels-of-service (LOS) for the study area intersections including the proposed site driveways.

The TIA identifies the impacts of the Project on the operations and capacity of the study intersection and states that the intersections will operate at LOS D or better with the addition of Project-related traffic.

15. VHB reviewed the operations analysis and Appendix worksheets. The Applicant conducted the operations analysis consistent with standard engineering practice. The operations analysis indicates that queues along Vinnin Street between Salem Street and Paradise Road may extend through the adjacent signalized intersections. VHB recommends that the Applicant review the existing traffic signal timings at the signalized intersections of Vinnin Street at Salem Street and Vinnin Street at Paradise Road to determine if changes can be made to minimize the queuing between the two intersections.
16. Based on the Applicants responses to Comments 4, 8, and 9, the traffic operations analyses should be updated accordingly.

Sight Distance Evaluation

The Applicant provided an evaluation of the sight distances at the two proposed driveways. Both stopping sight distance (SSD) and intersection sight distance (ISD) were reviewed. The sight distance requirements were based on a speed of 30 mph, which is above the reported 85th percentile speeds. The TIA states that both SSD and ISD are met at the Salem Street driveway and that they can be met with the trimming of vegetation at the Vinnin Street driveway.

17. VHB confirmed the sight distances at both site driveway locations during a field visit. VHB recommends that the Applicant provide a diagram showing the sight lines at each driveway and the areas for which vegetation removal is required to meet the SSD and ISD requirements. The Applicant should be required to commit to any necessary vegetation removal. Further, the Applicant should commit to regularly maintaining clear sight triangles in the future by not installing signage or landscaping that will impede future sight lines at both driveways, and to maintain existing vegetation that may pose restrictions in the future.

TIA Recommendations

The TIA provided recommendations related to Project access and Transportation Demand Management (TDM). The recommendations in the TIA include the following measures related to the site plan design:

- › Driveways should be 24 feet in width
- › Drive aisles should be a minimum of 23 feet
- › Vehicles exiting the site should be placed under stop-sign control with a marked stop-line
- › Signs and pavement markings should conform to the standards in the *Manual on Uniform Traffic Control Devices*
- › Americans with Disabilities Act (ADA) compliant wheelchair ramps should be provided at pedestrian crossings that are constructed or modified as part of the Project
- › Signs and landscaping within the intersection sight triangles should be designed and maintained so they do not restrict lines of sight
- › Snow accumulations within the sight triangles should be removed so they do not restrict lines of sight
- › Considerations should be given to installing electric vehicle (EV) charging stations for residents of the Project

The TIA included the following TDM measures:

- › A transportation coordinator will be designated for the Project to coordinate the TDM program

- › Information related to public transportation services, maps, schedules, and fare information will be posted in a central location
 - › A welcome packet will be provided to residents detailing public transportation services, bicycling and walking alternatives, and other available commuter options
 - › Work at home workspaces will be provided to support telecommuting by residents of the Project
 - › Pedestrian accommodations have been incorporated into the Project and consist of connections to existing sidewalks and ADA-compliant wheelchair ramps at pedestrian crossings that will be constructed or modified as part of the Project
 - › A mail drop will be provided in a central location
 - › Secure bicycle parking will be provided within the Project site consisting of weather protected bicycle parking and exterior bicycle racks
18. VHB recommends that the above measures be implemented by the Applicant. Additional recommendations related to the site design are provided in the next section.
19. VHB reviewed the TDM measures that will be implemented as part of the Project. The Applicant should commit to all recommendations presented in the TIA and consider the additional measures listed below:
- a. Provide residents with information related to carpool opportunities
 - b. Work with the local councils on aging to extend their Transportation Programs to the proposed development.
 - c. Consider working with a car-sharing service to locate a minimum of one space on the Project site, with the potential for additional spaces if there is demand for more

Parking and Site Plan Review

VHB conducted a review of the transportation-related elements of the Preliminary Site Plan Documents dated July 15, 2022 prepared by Bohler Engineering. The Site Plans display the locations of the site driveways, internal roadways, parking layout, and pedestrian facilities on the site. A total of 239 parking spaces will be provided on the site. Access to the site will be provided through two full access driveways that will operate under stop-sign control: one on Salem Street and one on Vinnin Street. Each driveway will be 24-feet in width and all circulating aisles for surface spaces will also be 24-feet in width with the exception of the structured garage adjacent to Vinnin Street, which will have a 20-foot-wide driveway and drive aisle. The following comments and recommendations are related to the review of the Preliminary Site Plans.

- 20. Double-yellow centerlines should be installed at the site driveways for a minimum of 25-feet from the stop-line to reinforce two-way travel on the driveways.
- 21. VHB recommends that the Applicant commit to providing electric-vehicle (EV) charging stations as well as EV-ready spaces on the site. The exact number of EV and EV-ready spaces should be reviewed with town staff and the agreed upon locations of the spaces should be shown on the site plan.
- 22. VHB recommends that the Applicant provide a discussion on how the on-site parking will be managed, it use controlled (for residents only, and not as informal overflow parking for nearby businesses), and what types of traffic controls or enforcement will be used to discourage vehicles from using the site as a cut-through route to avoid the traffic signal at the intersection of Vinnin Street at Salem Street.

23. VHB recommends that the Applicant show the location of the covered and secure bicycle storage on the site for residents and exterior bicycle racks for visitors.
24. Upgraded sidewalks adjacent to the Project site along Vinnin Street and Salem Street are shown on the site plans. VHB recommends that the sidewalks adjacent to the site be constructed to be a minimum of five feet wide. Additional pedestrian improvements resulting from addressing Comment 5 should also be included in the implementation plan by the Project.
25. The TIA and Preliminary Site Plan Documents indicate that the Project will have 237 total parking spaces. VHB notes that Section 4.6.8.1 of the Swampscott Zoning By-Laws and Section 200-44:H-1 of the Marblehead Zoning By-Laws for the Vinnin Square Smart Growth District state that a parking ratio of 2.0 spaces per unit should be provided for a total of 280 spaces. VHB requests that the Applicant provide a discussion of the proposed parking supply in relation to the applicable zoning requirements.
26. The Preliminary Site Plan Documents show that the standard dimensions for parking spaces on the site will be 9 feet wide by 18 feet long. Section 4.6.8.7 of the Swampscott Zoning By-Laws and Section 200-44:H-7 of the Marblehead Zoning By-Laws both state that parking spaces within the Vinnin Square Smart Growth District should be 9 feet wide by 20 feet long. VHB requests that the Applicant provide a discussion of the proposed stall dimensions in relation to the applicable requirements.
27. VHB recommends that the Applicant describe site operations related to trash/recycling, move-in/move-out, deliveries, pick-up/drop-off, and snow storage. Specific areas for each activity should be identified on the site plan.
28. VHB recommends that the Applicant provide sight line diagrams at each of the driveways and how they relate to the proposed landscaping shown on the site plans (see Comment 13).
29. VHB recommends that the Applicant provide vehicle turning templates for the largest emergency vehicle for Marblehead and Swampscott to show how they will access all areas of the site. It is recommended that the Applicant coordinate with the Marblehead and Swampscott Fire Departments to ensure they have access to all sides of the buildings on the site.

The above comments should be addressed by the Applicant in a response letter, along with the appropriate supporting information so that VHB can review and finalize the independent peer review. VHB is available to discuss the comments with the Applicant and their consultants to facilitate the review. Please feel free to contact VHB if there are any questions related to this review.