



Stantec Consulting Services, Inc.
65 Network Drive 2nd Floor
Burlington, MA 01803-2767

January 11, 2021

Attention: Gregory T. Federspiel, Town Administrator

Manchester by the Sea Town Hall
10 Central Street
Manchester by the Sea, MA 01944

**Subject: Traffic Impacts Peer Review Initial Findings Letter
Sanctuary at Manchester by the Sea, MA 40B Development**

Dear Mr Federspiel:

In accordance with our Agreement of December 18, 2020, Stantec Consulting, Inc. is pleased to submit this initial letter pertaining to ***Task 1 – Conduct a peer review of the Traffic Impact Assessment (TIA) prepared for a Proposed Multi-family Residential Development on School Street at Manchester by the Sea.***

The referenced TIA is dated September 2020 and was prepared by Vanasse & Associates Inc. (VAI) of Andover, Massachusetts on behalf of the Project Proponent, SLV School Street, LLC.

The Applicant proposes to construct the proposed multi-family development on a wooded undeveloped 27.72-acre site on the west side of School Street. Located adjacent to Route 128, the site has excellent regional access. Specifically, the Applicant proposes to construct 157 multi-family units in two connected 4-story buildings with site recreational amenities. Of the 157 units, 80 would be one-bedroom, 61 two-bedrooms, and 16 three-bedrooms. A total of 247 on-site ancillary parking spaces are proposed—most within a below grade parking deck. This provides a parking ratio of 1.57 spaces per unit including 7 accessible spaces, of which 3 would be van-accessible. On-site outdoor and indoor recreational amenities will be provided in the attached connector between the two residential buildings.

Access to the site is proposed via a single two-way driveway approximately 1/3 mile in length.

1.1 - Review traffic/circulation study materials

In addition to the TIA, we obtained and reviewed traffic-related access and parking elements of the site plan set prepared by Allen & Major Associates dated September 24, 2020.

Supplemental to these core review materials, we examined:

- 2019 and 2020 MassDOT counts on Route 128 exits.
- Pertinent information from the Final Draft Manchester Master Plan (November 2019).

Reference: Traffic Impacts Peer Review Initial Findings Letter

- Pertinent information from Manchester Complete Streets – Tier 2 report (August 2017) and follow up implementation plans.
- Appendix G of Manchester’s Subdivision Rules and Regulations (traffic impact guidelines).
- Pertinent comments from municipal boards (December 17, 2020 Select Board meeting).
- Manchester Essex Conservation Trust (for nearby public trail locations)
- National Fire Protection Association 1® Guidelines on Fire Access needs applicable to the Commonwealth of Massachusetts.¹

1.2 - Site visit

Due to peer review time constraints, a site visit to the Sanctuary at Manchester by the Sea (MBTS) was conducted on Tuesday, December 29, 2020. While usually we like to observe ‘normal’ peak traffic conditions, observed post-Christmas traffic demands were lower than normal. Late December is typically a low month for traffic demands as MBTS is a beach community with peak traffic, pedestrian, and bicycle activity occurring during the summer months of July and August. The on-going pandemic continues to reduce traffic volumes, and cold weather significantly diminished observed pedestrian and bicycle movements. The afternoon site visit was nonetheless useful as it included contextual low-side traffic observations, roadway markings, signs, geometric, and topographic features.

In addition to reviewing the TIA Study Area, we also observed the School Street corridor between Old School Street, a Manchester Essex Conservation Trust trailhead located just north of the Study Area, and the MBTS village center. For the same reasons cited above, downtown MBTS Village Center mid-day parking demands observed on December 29, 2020 were much lower than normal, especially those pertaining to the MBTA’s downtown Manchester commuter rail station. During the site visit, recently installed variable speed feedback signs were observed on School Street near the Village Center as well as sight distance and ‘complete streets’ type cross walk intersection enhancements at the intersection of School Street with Central and Union Streets.

There is no specific traffic peer review guidelines criteria that pertain to the assessment of parking impacts at distant off-site locations for this or any other types of development. Nonetheless, we understand the Town is concerned about the future adequacy of its downtown parking supply to accommodate projected future increases in parking demands pertaining to the Sanctuary at MBTS within the MBTS Village Center and the Manchester MBTA Commuter Rail Station. We understand that MBTS has programed a separate village parking study in the near future. That upcoming study will assess peak Village Center parking demands and utilization characteristics and recommend any necessary changes to the Village Center parking supply or transit access services to address existing and future parking shortages.

¹ Based on 1/7/21 discussions with Manchester Fire Chief Jason Cleary.

Reference: Traffic Impacts Peer Review Initial Findings Letter

1.3 - Review study methodology, trip generation, and trip distribution assumptions

The TIA acceptably conforms to analysis procedures identified in MassDOT's Traffic Impact and Access Study guidelines (3/13/2014). The TIA used the latest ITE Trip Generation report, and the latest available US Census Journey to Work data to estimate trip generation and trip distribution for the development site. The TIA estimates the Sanctuary at MBTS will generate 854 vehicle trips per day – 427 in and 427 out. Of the typical weekday trips generated, the TIA projects 53 trips (39 out/14 in) will occur during the morning peak hour and 68 (27 out/ 41 in) during the afternoon peak hour. These estimates are reasonable.

Our review of the TIA trip distribution pattern assumed for the Sanctuary at MBTS occupants indicates it is also acceptable and reasonable. The TIA indicates that 60% of future site-generated AM and PM peak hour traffic will be oriented toward to and from Route 128 SB via Exit 15. Approximately 30% of site-generated peak hour traffic is expected to continue to and from the south on School Street. Relatively small 3-4% components of site-generated traffic will be oriented to and from the north on School Street, and east on Route 128 NB via Exit 15, respectively. The TIA trip distribution estimates are reasonable.

To summarize, the methods used to calculate trip generation and trip distribution reported in the TIA are reasonable and acceptable, and are based on typical traffic engineering methodologies.

1.4 – Review Study Area and existing volumes

From the site visit and our review of historical traffic volumes in Manchester, we conclude that the TIA Study Area identified and the number of intersections it includes is reasonable and acceptable from a traffic analysis perspective.²

² We understand the Town is concerned about how the site will affect traffic operations at the intersections of School/Pleasant Streets and School/Union/Central Streets. These intersections are 1-2 miles south of the site driveway intersection with School Street. We are aware that the Town recently implemented Complete Streets sight line and crosswalk enhancements at the School/Central/Union Streets intersection. The TIA projects that the Sanctuary at MBTS will add approximately 16-21 new vehicle trips total in both directions to School Street south of the Route 128 ramps during the AM and PM peak hours, respectively. The TIA also estimates that, by 2027, School Street south of the Route 128 ramps will be carrying a total of 823 and 1,096 vehicles in both directions during the AM and PM peak hours, respectively. The relatively small 2% changes in peak hour volumes due to the Sanctuary at MBTS will be far less than normal day-to-day traffic variations. We therefore do not recommend adding the two intersections of concern to the Study Area, as both will operate similarly with or without the Sanctuary at MBTS development and will not trigger the need for improvements specifically related to this development.

Reference: Traffic Impacts Peer Review Initial Findings Letter

In accordance with MassDOT guidelines, the TIA authors increased actual Study Area traffic volumes counted during July 2020 by 30% to evaluate 'existing' traffic volumes. This was done to account for known pandemic traffic decreases. Also, MBTS, a beach community, has July traffic volumes that are normally 14% higher than average annual conditions. We therefore conclude the 'existing' traffic volumes reported in the TIA are conservative, being up to 44% higher than the likely 'average annual' volumes.

1.5 - Review accident analysis

Crash analysis information as reported in the TIA is acceptable. Consistent with MassDOT guidelines, the TIA evaluated a 5-year period for crash analyses between 2013 and 2017, the most recent available period for crash analysis. None of the Study Area intersections had historic crash rates exceeding average crash rates at similar unsignalized intersections either statewide or within MassDOT District 4, which includes Manchester by the Sea.

1.6 - Review background traffic growth

According to the TIA, background traffic growth to account for unspecific traffic growth sources was increased by 1% per year between the pandemic-adjusted 'existing' 2020 traffic volumes and the year 2027 for the No-Build and Build analyses. The TIA indicates that historical traffic growth rate was approximately 0.63%. Therefore the 1% used is conservative. The future traffic volumes analyzed were set to an aggregate growth rate of 7.2% for *adjusted* background traffic between 2020 and 2027 corrected for pandemic-related traffic reductions. As indicated in the TIA, Manchester's Town Planner confirms that no known developments are projected within the project impact area.³ This is a reasonable assumption for background traffic growth.

1.7 - Review and evaluate level of service (LOS) analyses

Our review of existing (2020), No-Build (2027) and Build (2027) indicates the LOS analysis sheets for all time periods were done acceptably.

VAI used Synchro® Version 10 for analyzing AM and PM peak hour traffic operations. The Synchro® traffic operations analysis software packages is accepted by MassDOT for the evaluation of unsignalized intersections such as those included in the TIA.

³ During the December 29, 2020 site visit, a sign was observed indicating that a Cornerstone Church is proposed for construction on the east side of School Street just south of the Route 128 northbound ramps. Sue Brown, the Manchester Town Planner, in a phone conversation on January 5, 2020, indicated that plans to develop this area have not yet been prepared. When they do become available, the Church will need to incorporate the Sanctuary at MBTS traffic in its background traffic, not vice versa.

Reference: Traffic Impacts Peer Review Initial Findings Letter

The TIA addresses three unsignalized intersections where levels of service (LOS) were evaluated for 2020 'existing' and 2027 No-Build AM and PM peak hour conditions. From north to south, these intersections include:

- School at Atwater Streets,
- Route 128 SB Exit 15 at School Street; and
- Route 128 NB Exit 15 at School and Mill Streets.

The future site driveway intersection with School Street was also analyzed in the TIA for the year 2027 Build AM and PM peak hour conditions only, as it does not exist in 2020, and would not exist under the No-Build condition.

The TIA analysis of 'existing' year 2020 conditions found that all traffic movements through two of the three evaluated intersections are operating acceptably during AM and PM peak hours. With existing volumes increased to reflect non-pandemic conditions, the TIA projects that only the eastbound left and through movement of the Route 128 NB off-ramp to School Street operates with congestion (LOS F) during the afternoon peak hour only. It finds that all the remaining traffic movements at the three intersections in the Study Area will operate at acceptable LOS A-D operations during 'existing' pandemic-corrected AM and PM peak hours. These findings are reasonable.

However, the TIA estimates that by the year 2027, left and through ramp traffic approaching School Street at both Route 128 Exit 15 NB and SB ramp terminals will experience congestion LOS E or F during the AM and PM peak hours. By adding approximately 25 vehicles to the Route 128 NB off-ramp's left turn demand, traffic from the Sanctuary at MBTS will degrade one of the 2027 No-Build traffic movements from LOS E to LOS F. The TIA also finds that peak hour traffic operations will be similar *with or without* traffic generated by the Sanctuary at MBTS. These findings are reasonable and acceptable.

The analysis shows that motor vehicle traffic at the future site driveway with School Street and School Street at Atwater Street should operate at acceptable levels of service A-D during the site-Build AM and PM peak hours. These findings are reasonable and acceptable.

1.8 - Assess the adequacy of proposed traffic mitigation measures

The TIA recommends the following traffic mitigation measures:

Off-site

The TIA proposes preparing a study such that it will suffice for the Town to apply for MassDOT funding for the future construction of operational and safety improvements at the Route 128 Exit 15 interchange, with conceptual design features. This is an acceptable mitigation measure. In

Reference: Traffic Impacts Peer Review Initial Findings Letter

addition to signalization of the ramps, we recommend that VAI's recommended study of Exit 15 not only consider signalization, but the potential for roundabout configurations at both ramp termini. If future congestion and crashes indicate countermeasures are needed, two roundabouts may overall, be less expensive than signalization. They may also produce better operational and safety results based on the projected volumes as presented in the TIA. Roundabouts especially benefit left turning movements from the ramps because they are made as circular right turns. Also, if MBTS at some point constructs a sidewalk on the east side or both sides of School Street to the north of the interchange, roundabouts provide good opportunities for incorporating sidewalks and low-speed yielding conflicts without the need to signalize the crossings.

Comment: While the TIA did not address this issue specifically, we checked whether future volumes of left turns into the site would warrant the installation of a left turn lane on School Street with full site development. We conclude that minimum left lane warrants on the northbound approach to the future site driveway intersection are not met. Nonetheless, it may be beneficial, if feasible, to consider a minor shoulder widening in the northbound direction of School Street to create an opportunity for a right lane bypass without encroaching on the unpaved shoulder. If done, it should conform to MassDOT design guidance. With School Street design speeds of 40+ mph at the site driveway, a bypass lane could represent a future safety benefit by reducing the potential for rear-end collisions in when the site generated vehicles are waiting to turn left. This is optional consideration, as we recognize that even a modest shoulder widening potentially has adverse environmental drawbacks that must be considered along with its potential safety benefits.

Even if it is not possible to construct an ADA-compliant sidewalk on one side of the site driveway, observations indicate there is an unpaved, non-ADA compliant, shoulder on both sides of School Street that could be used by pedestrians. MBTS does not have existing plans to construct a sidewalk on one or both sides of School Street north of Exit 15. While not the Applicant's responsibility, at some time in the future, provision of a sidewalk on one or both sides School Street to Exit 15 would be advantageous for existing and site generated pedestrian and bicycle connectivity and for accommodating future transit shuttle stops on School Street, whether year-round or seasonal.

Project Access (TIA recommendations in parentheses)

- *The boulevard section of the Project site driveway should provide two (2) 14-foot wide (minimum) travel lanes separated by a 6-foot wide (minimum) raised median with openings or traversable areas provided along the median every 200-feet to allow for emergency vehicles to cross the median when necessary. The non-boulevard section of the driveway should be a minimum of 22-feet in width and designed to accommodate the turning and maneuvering requirements of the largest anticipated responding emergency vehicle.*

Reference: Traffic Impacts Peer Review Initial Findings Letter

Comments: MBTS has the following *safety* requirements in its Subdivision Rules and Regulations as they pertain to site access:

- Maximum cul-de-sac length of 500 feet “unless a greater length is deemed desirable by the topography or other local conditions”;
- Two means of access for any road serving more than 10 dwelling units;
- For roads serving more than 120 units, a paved width of 34 feet and maximum grade of 6% is required;
- Minimum sight distance of at least 100 feet from the centerline;
- Minimum centerline radii of 150 feet; and
- A sidewalk is required.

The Sanctuary at MBTS site plan, as proposed, has several features not in conformance with all of the above safety guidelines. These features should be addressed to the maximum extent possible.

We recognize that the 40B legislation does not require the Applicant to conform to Manchester’s cul-de-sac guidelines. However, the vast majority of communities within the Commonwealth of Massachusetts cite maximum lengths at 500-600 feet. Given the long cul-de-sac length, coupled with the proposed site driveway’s horizontal and vertical curvature, the Applicant should provide two effective accesses to serve this site in a safe and efficient manner, even if one of those accesses, while maintained during all seasons, is gated and used only during emergency conditions.

An AutoTurn® or similar truck turning envelope analysis should be presented along the entire driveway system using the largest emergency or other moving/delivery vehicles expected to service the site. The requested AutoTurn® or similar analysis will be used to determine whether the proposed driveway may require widening on curved sections to accommodate simultaneous turning vehicles without encroachment on the opposing vehicle travel lane. The design speed of the driveway appears to be 10-15 MPH, given its horizontal and vertical curvature. Is a speed limit proposed to address the horizontal and vertical curvature of the site driveway? A required speed limit for both directions and speed feedback sign are appropriate along with edge speed reduction markings in the downhill direction.

We question whether there is a need to install a raised median for more than the first hundred feet of roadway. An undivided 34’ roadway, such as required by Manchester’s Subdivision access guidelines is less likely to become blocked than a median-divided 34’ edge-to-edge roadway.

- *Where perpendicular parking is proposed, the drive aisle behind the parking should be a minimum of 23-feet in order to facilitate parking maneuvers.*

Reference: Traffic Impacts Peer Review Initial Findings Letter

Comment: This statement is acceptable. However, several of the parking spaces within the proposed parking garage have backing, side clearance, and circulation continuity issues. Refer to the site plan parking layout circulation features discussion further on in this letter.

We concur with the following TIA recommendations:

- *Vehicles exiting the Project site should be placed under STOP-sign control with a marked STOP-line provided.*
- *All signs and pavement markings to be installed within the Project site should conform to the applicable standards of the Manual on Uniform Traffic Control Devices (MUTCD).*
- *Americans with Disabilities Act (ADA) compliant wheelchair ramps should be provided at all pedestrian crossings that are to be constructed or modified as a part of the Project.*
- *Signs and landscaping to be installed as a part of the Project within the sight triangle areas of the Project site driveway should be designed and maintained so as not to restrict lines of sight.*
- *Snow windrows within sight triangle areas of the Project site driveway should be promptly removed where such accumulations would impede sight lines.*
- *Consideration should be given to providing accommodations for electric vehicle charging for residents of the Project.*

Site Driveway at School Street – Sight Distance



Reference: Traffic Impacts Peer Review Initial Findings Letter

The TIA found acceptable sight lines at the future intersection of the Sanctuary at MBTS driveway with School Street. Our on-site observations confirmed the acceptability of the sight line information as presented in the TIA.

TIA estimates of the required minimum stopping and intersection sight distances between 360 and 500 feet are acceptable and are exceeded in both directions of School Street for greater than a 45 mile per hour speed of approaching traffic.

Transportation Demand Management

The TIA cites that the MBTA provides commuter rail service to MBTS and that the service is a 7-minute drive from the site. It is unclear how the potential shuttle transit stop shown on the site plan adjacent to the end of the cul-de-sac will work to help alleviate site demands on the downtown parking supply or access to the MBTA commuter rail station.

The TIA recommends:

- *Information regarding public transportation services, maps, schedules and fare information will be posted in a central location and/or otherwise made available to residents;*
- *A “welcome packet” will be provided to new residents detailing available public transportation services, bicycle and walking alternatives, and commuter options available;*
- *Pedestrian accommodations will be incorporated into the Project and consist of sidewalks and ADA compliant wheelchair ramps at all pedestrian crossings that are to be constructed or modified as a part of the Project;*
- *Work-at-home workspaces will be provided to support telecommuting by residents of the Project;*
- *An internal mail room will be provided within the building; and*
- *Bicycle parking will be provided consisting of both an exterior bicycle rack located proximate to the building entrance and weather protected bicycle parking within the proposed parking garage.*

Without the appropriate supporting infrastructure, reasonable off-site bicycle or pedestrian access between the Town Center and the site will be problematic. Bicycle and pedestrian flow will be unfriendly due to the curved and relatively steep driveway access coupled with the absence of paved walking or biking infrastructure off-site on the relatively high-speed segment of School Street in front of the site.

Access to an Old School Street Manchester Essex Conservation Trust (MECT) trail just west of the site is not discussed in the TIA. MECT has nearby trails emanating from the Old School Street layout that should be discussed for possible site connectivity. Maps of MECT trails indicate that existing informal trails may actually exist on the development site. The post-development status

Reference: Traffic Impacts Peer Review Initial Findings Letter

of these connections should be addressed to enhance pedestrian and bike access to the Town's trail system and to determine how the site development affects them.

1.9 - Check the adequacy of the site plan circulation features

Impact of the proposed unit count and cul-de-sac driveway on fire emergency access safety: With regard to the proposed development quantity of 157 units, the Town guidelines would require a second access. The Commonwealth of Massachusetts fire protection guidance does not specify a maximum number of units that can be served by a single access road.⁵

There is no discussion in the TIA about the length of the proposed cul-de-sac, which we find to be excessive. At $\pm 1,700$ feet in length, the proposed cul-de-sac driveway far exceeds the maximum cul-de-sac length of 500 feet under Manchester's Zoning Bylaw. Manchester's cul-de-sac bylaw is not unusual, in that the average maximum cul-de-sac length in the vast majority of Massachusetts' communities rarely exceeds 600 feet.⁶ Minimizing cul-de-sac lengths is good design practice⁷ for emergency safety, water service, and transportation mode connectivity reasons.

Wetlands and topography make the provision of a secondary access at this site very challenging. Ideally, an emergency loop road configuration should be provided for the Sanctuary at MBTS.

Impact of proposed access driveway steep grades on access safety: Approximately ± 750 linear feet of the proposed site driveway exceeds 6%, including grades up to 7.5%. Such steep grades will require diligent maintenance procedures to keep the driveway operational during winter snow/icing events, particularly given the driveway's horizontal curvilinear alignment.

Given the steep access driveway grade and absence of walking or biking infrastructure, few bicyclists and pedestrians are likely to use it to access School Street. While not impassable, the proposed access driveway will not be pedestrian or bicycle friendly, as it will not be ADA-compliant and will have a long stretch with 5%-7.5% running grades. Motor vehicles – whether cars or shuttles -- will be the primary mode for site residents and visitors to access this site.

Site parking adequacy: The Applicant proposes a parking supply of 247 spaces including 7 accessible spaces of which 3 will be van-accessible. This averages 1.57 spaces per unit, which exceeds the Town's zoning requirement of 1.5 spaces per unit. Additionally, based on the latest

⁵ While not applicable in this case, we are aware that there is ITE guidance recommending two accesses if more than 20 dwelling units are proposed.

⁶ Dead Ends, Maximum Lengths, Pioneer Institute for Public Policy Research – (2004).

⁷ Sustainable Neighborhood Road Design – A Guidebook for Massachusetts Cities and Towns, Massachusetts Chapter or APA – (May 2011).

Reference: Traffic Impacts Peer Review Initial Findings Letter

ITE Parking Generation report (5th Edition, 2020), site peak parking demands for 250 bedrooms within the proposed 157 units should range from 185-188 occupied parking spaces. We find that the proposed parking supply should be more than adequate to accommodate typical site parking demand peaks that are likely to occur during the overnight hours.

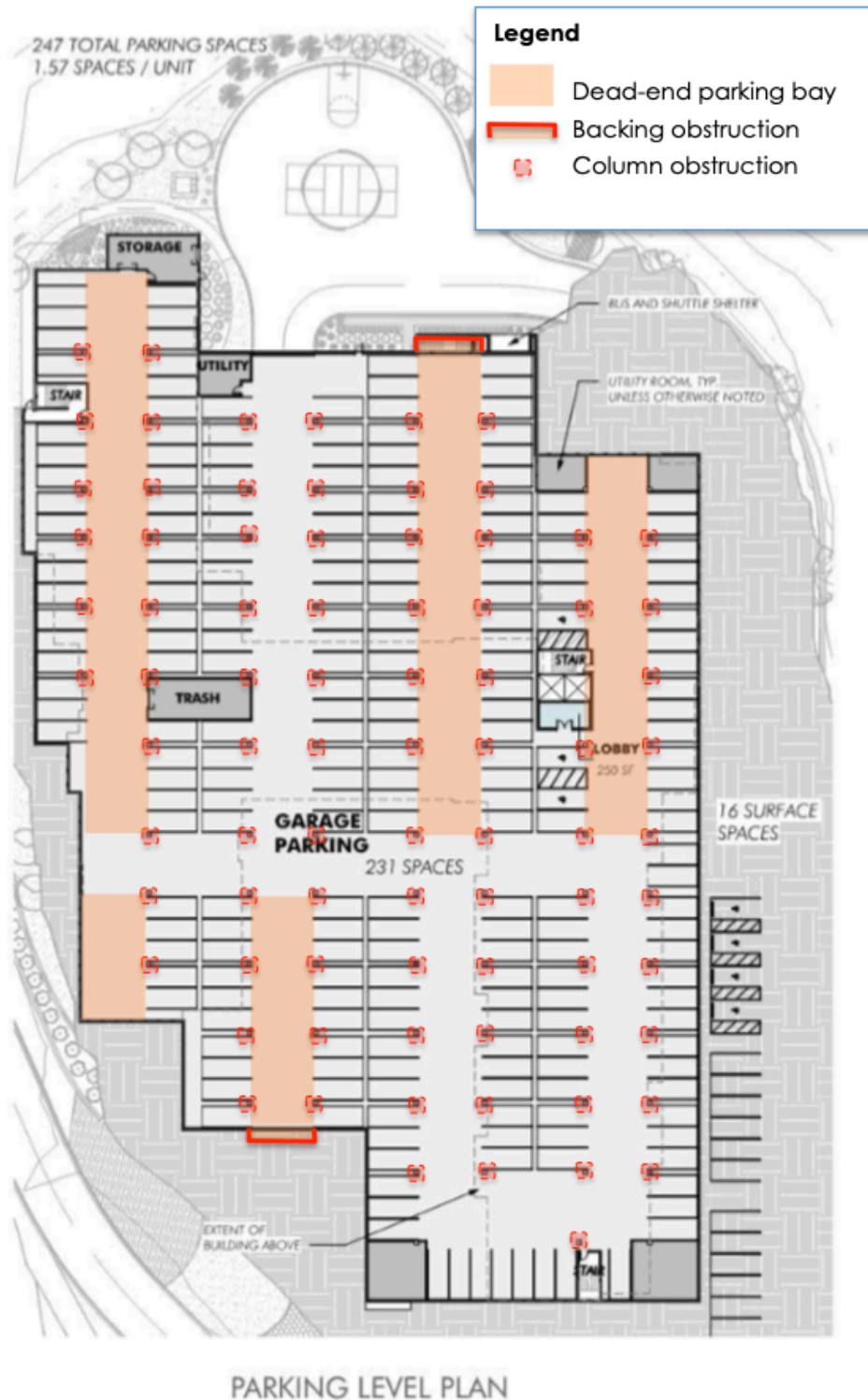
Augmented by an illustration on the next page, comments below pertain to circulation issues that warrant some discussion with the Applicant for safe garage operations, in order of importance:

- **Dead-end parking bays.** The site plan proposes a total of five 'dead-end' parking bays. Such dead-end bays are problematic and are not recommended. It is not always possible to see whether a space is occupied at the entrance to a dead end parking bay, even if all spaces are assigned to individual units. Additionally, if for any reason, an emergency vehicle must enter the garage, the absence of driving continuity could present a hazardous circulation condition.
- **Backing obstructions.** At least four parking spaces are located too close to walls for safe backing maneuvers. If possible, an indent of at least 6 feet should be considered to create a backing area for vehicles when exiting the spaces in question. We note that this issue is eliminated if there are no 'dead-end' parking bays.
- **Structural columns.** While not always practical to do so, it is best to minimize the use of structural columns in garages because they create safety hazards for users adjacent to them and a high incidence of 'fender-benders'. It is necessary to add some additional clearance areas around structural columns for the safety of motorists driving into or out of their spaces and walking between vehicles to or from their parking spaces, usually 2 feet additional width on each side of the column or, essentially a total envelope of 5 feet around the columns. The garage plan submitted calls for the installation of more than 80 columns that will directly affect the users of approximately 160 of the 231 parking spaces in the garage. The envelope around the columns seems to be 2 feet rather than 5 feet in width.

ADA and MAAB compliance: The TIA recommends the site plans be compliant with the federal Americans with Disabilities Act (ADA) and the Massachusetts Architectural Access Board (MAAB). As noted above, the Applicant proposes to create an accessible sidewalk system only adjacent to the building, not along the steep access driveway.

Reference: Traffic Impacts Peer Review Initial Findings Letter

Site Parking Layout Issues of Concern



Reference: Traffic Impacts Peer Review Initial Findings Letter

Without an ADA compliant sidewalk, the site driveway will not be attractive for bicycle or pedestrian circulation, as more than 700 linear feet of the driveway averages a 7% grade.

Transit/Shuttle stop: A transit/shuttle stop is identified on the site plan at the end of the site driveway cul-de-sac adjacent to the northeast corner of the building. If available, the transit/shuttle stop will be the only reasonable way for residents to access MBTS Town Center services without driving. This stop, as illustrated on the architectural parking plan, seems to comply with ADA/MAAB accessibility requirements.

The potential shuttle service requires a relatively steep uphill/downhill vehicle trip via a 2/3-mile total route diversion from School Street (1/3-mile up; 1/3 mile down) to provide site service as a part of a public route service. The type, service level, and viability of such a proposed shuttle/transit service needs to be clarified.

The availability of funding through the Massachusetts Bay Transportation Authority (MBTA), which serves MBTS today, or the nearby Cape Ann Transit Authority (CATA), which could serve the site at the Town's discretion, is unclear. If either transit service entity is unable to obtain funding for the service, the Applicant should consider the possibility of a residential subscription van/shuttle service connecting downtown Manchester and the MBTA commuter rail station to the site. Permission for any new or shared service stops on School Street and in the Town Center must be obtained from the Town or the MBTA with appropriate transit/shuttle stop infrastructure provided.

Site Loading and moving van access: The Applicant should provide an AutoTurn® or equivalent truck turning analysis showing how site loading and turnaround at the end of the cul-de-sac will occur assuming the largest vehicles expected to access the site. The analysis should confirm whether geometric features of the site driveway and turnaround will be adequate to accommodate occupied envelopes of the largest vehicles approaching the site buildings to and from School Street.

Conclusions

We find that the TIA was well done and generally complies with acceptable methodologies and procedures identified by MassDOT as they pertain to traffic generation, trip distribution and evaluation of existing and future traffic operations and off-site safety with and without the development. Off-site traffic operations and safety characteristics for the site's projected motor vehicle traffic impacts are reasonable and acceptable.

On-site, however, adverse site access features are driven by constraining steep topography and wetlands. The proposed approximately 1/3 mile length cul-de-sac site driveway creates several potential access safety issues.

Reference: Traffic Impacts Peer Review Initial Findings Letter

The proposed access road has steep grades and sharp horizontal curves that do not comply with the requirements of MBTS's Subdivision Rules and Regulations. Most state and national guidelines that we are aware of recommend a secondary means of access should be created to serve the proposed 157 apartment units, preferably in a loop road configuration.

As currently designed, the access driveway's grading and horizontal curvature will discourage pedestrians and bicyclists from traveling to and from the site. The approach to maintaining good site access at all times, including winter icing conditions and unforeseen road blockages, should be provided.

Proposed site plans should show how or whether the site will accommodate and access existing nearby off-site Manchester Essex Conservation Trust (MECT) trails.

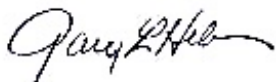
The site's proposed 247-space parking supply should serve site related parking demands acceptably. We have identified concerns about the layout of the proposed garage and internal parking operations that should be addressed.

A shuttle/transit stop is proposed on the site. Operations of such a service should be clearly identified, as it may be the best way to enhance pedestrian and bike access via School Street and the Town Center.

We appreciate the opportunity to assist the Town with these services and look forward to working with the Applicant to the successful resolution of issues raised in this peer review letter.

Regards,

Stantec Consulting Services, Inc.



Gary L. Hebert, PE
Consultant/Peer Reviewer
Phone: 781-249-0419
Email: Gary.Hebert@stantec.com

Reference: 179411000