



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

August 27, 2020 – Rev. 1

Attention: Scott Mallory

Chair, Dracut Zoning Board of Appeals

Town Hall
62 Arlington Street
Dracut, MA 01826

Subject: **Traffic Consulting Peer Review
Proposed Dracut Senior Housing Development
Dracut, Massachusetts**

Dear Mr. Mallory:

Stantec Consulting, Inc. is pleased to submit this letter that summarizes our findings from a peer review of anticipated traffic impacts from the Dracut Senior Housing development proposed at 144 Greenmont Avenue and 1530 Bridge Street (Route 38). The development plan calls for construction of 60 attached units on a ±18.3-acre site. The proposed Dracut Senior Center Housing development will consist of 54 one-bedroom apartments and 6 two-bedroom apartments within a single three-story building.

As we understand it, the new building will be constructed on an undeveloped site at 144 Greenmont Avenue and 1530 Bridge Street. Site vehicle access is proposed via a private cul-de-sac road intersecting Greenmont Avenue. However, to maximize emergency access, the site will have a gated paved 10-foot wide driveway/walkway connecting it to 1530 Bridge Street.

The Town of Dracut has identified the site as a priority area for the development of affordable housing. All 60 of the apartments created will count to the Town's affordable housing supply.

This peer review focuses on traffic-related information contained in the June 2020 Chapter 40B Comprehensive Permit Application and the August 13, 2020 site civil plans prepared by BWA Architecture and Places Associates, Inc. on behalf of Common Ground Development Corporation.

The site's Traffic Impact Statement (TIS) prepared for the Dracut Senior Housing development by Places Associates, Inc., is summarized in Appendix J of the Comprehensive Permit Application.

To provide context for our findings, information contained in the adopted final Dracut Master Plan dated May 20, 2020 and the 2019 Northern Middlesex Regional Traffic Volume Report prepared

by the Northern Middlesex Council of Governments (NMCOG) proved to be very helpful. Additionally, public transportation information from the Lowell Regional Transportation Authority (LRTA) was reviewed as it pertains to this site.

Our Peer Reviewer is Gary L. Hebert, PE. Gary has peer-reviewed more than twenty Chapter 40B developments in communities throughout Massachusetts.

Site Visit

The Peer Reviewer visited the development site during a typical summer weekday afternoon on August 25, 2020. We recognize that the on-going pandemic has reduced traffic volumes, so we augmented the site visit by relying heavily on the most recent traffic data available, especially traffic volumes collected by NMCOG and MassDOT during 2019, to provide traffic volume context for this site. Refer to the next page for a few of the photos taken during the late afternoon site visit.

Traffic and pedestrian/bike circulation conditions were observed on Greenmont Avenue and its intersections with Bridge Street (Route 38), Vermont Avenue and Pleasant Street (Route 113). Sight lines were also reviewed at the proposed cul-de-sac driveway intersection with Greenmont Avenue and are shown on the page that follows. The Greenmont at Vermont Avenues intersection has three-way, or all-way stop control and an LRTA Route 10 bus stop on its southwest corner. The Pleasant Street (Route 113) has bus stops on its Greenmont Avenue corners. A Route 10 bus was observed travelling down Greenmont Avenue in an easterly direction during the site visit.

The site visit indicates that Greenmont Avenue has an open drainage system with no curbing or catch basins and a paved width varying from 22-24 feet. Directly in front of the site's future driveway, its paved width is of approximately 24 feet. Its background traffic volumes are estimated to be relatively low, ranging from 500-1,500 vehicles per day during 'non-pandemic' conditions. Its pavement is in good condition with some minor cracking. It has no centerline or shoulder pavement markings and no sidewalks. Greenmont Avenue has one crosswalk at its Elementary School just south of its intersection with Spring Park Avenue. On-street parking is not permitted on Greenmont Avenue. Assuming the Town routinely trims back vegetation in the public layout, the field review found that the future cul-de-sac driveway would have adequate sight lines to provide intersection sight distances of approximately 500 feet in both directions.

Greenmont Avenue operating vehicle speeds were observed at approximately 25-30 miles per hour. Greenmont Avenue provides a generally east-west connection between Bridge Street (Route 38) and Pleasant Streets (Route 113) via a sharp left turn at Vermont Avenue. Greenmont Avenue School is located on the east side of Greenmont Avenue north of Pleasant Street. As the Greenmont Avenue School was not in session, Greenmont Avenue had little to no pedestrian and bicycle traffic during the afternoon site visit.



Sight line looking east from future driveway on north side of Greenmont Avenue



Sight line looking west from future driveway on north side of Greenmont Avenue



South side of Greenmont Avenue looking west toward Vermont Avenue



North side of Greenmont Avenue looking east toward Bridge Street



South side of Greenmont Avenue looking east to Route 10 bus at Bridge Street

Design with community in mind



South side of Greenmont Avenue looking north to future site driveway

Review of Study Area and Existing Volumes

Based on the site visit observations as well as a review of historic MassDOT counts in Dracut, the Peer Reviewer estimates that on a typical weekday, Greenmont Avenue likely carries between 500-1,500 vehicles per day. This is a relatively low traffic volume and is considered to be a 'pedestrian friendly' street. MassDOT's guidelines suggest that streets carrying fewer than 2,000 vehicles per day with travel speeds 30 mph or less can be considered pedestrian-friendly even without sidewalks. During the field visit, no bikes were seen, so we assume Greenmont Avenue carries few bicycle trips on a daily basis. Bikes using Greenmont Avenue operate under a 'share the road' condition. According to a 2019 MassDOT count, Bridge Street (Route 38) south of the site carried approximately 12,584 vehicle trips on a typical weekday. Pleasant Street (Route 113) east of Lakeview Avenue carried approximately 16,600 vehicle trips on a typical weekday during 2010.

Review of Trip Generation Methodology

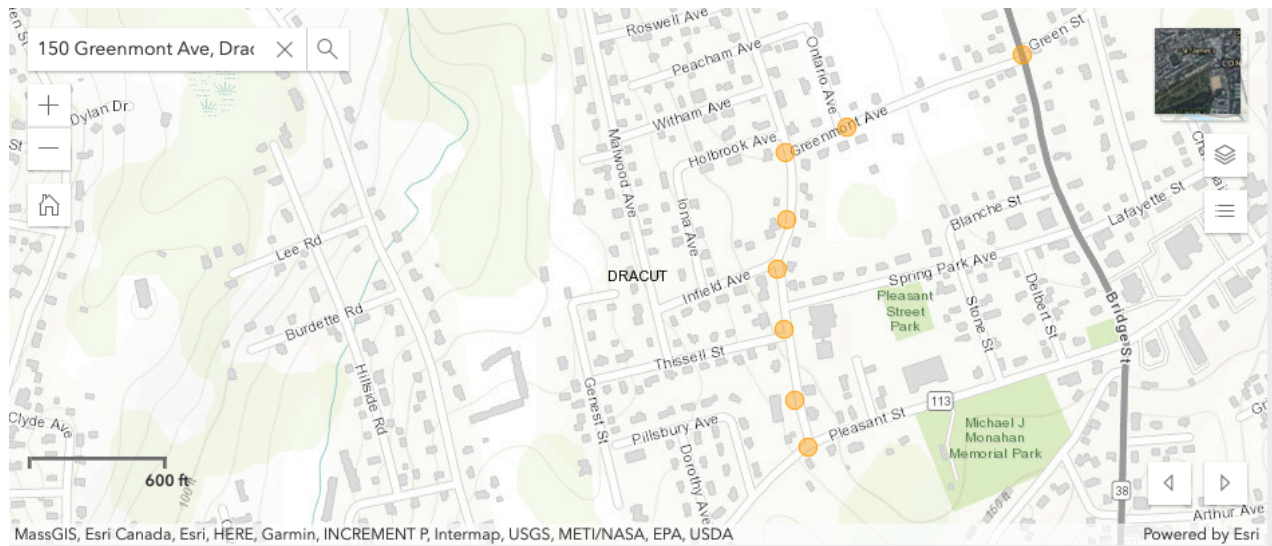
The TIS used a standard method to calculate future trip generation, the Institute of Transportation Engineering (ITE) Trip Generation publication, 10th Edition, 2020. Specifically, ITE land use code 252 – attached senior housing, is referenced. The following trip generation estimates, as provided in the TIS, are reasonable and acceptable:

Land Use: 60 Units of Senior Housing	AM Peak Hour	PM Peak Hour	Weekday (24 hrs.)
Trips In	2	11	108
Trips Out	10	6	108
Total Trips	12	17	216

Based on the site visit, trips are likely to be distributed similar to the directional street volumes on Greenmont Avenue. The site visit found a fairly even directional flow on Greenmont Avenue. The sites projected trip generation rates cited above are reasonable based on the nationwide ITE information. We concur with the Applicant's TIS that generating one vehicle every three to four minutes during the morning and afternoon peak hours is a relatively low traffic impact.

Review nearby crash history

The Peer Reviewer checked MassDOT's crash portal to review crash rates on Greenmont Avenue. During the last five years, a total of 8 crashes were reported along Greenmont Avenue. Of these, seven involved property damage only, and one may have involved an injury. No fatal crashes were reported. No Greenmont Avenue intersection experienced more than one reported crash during a five-year period. Refer to the next page for an excerpt from MassDOT's IMPACT crash portal for Greenmont Avenue.



*Excerpt: MassDOT Crash Portal
 Greenmont Avenue reported crashes 8/2015 to 8/2020*

We therefore conclude that the *Greenmont Avenue is not a high-hazard/high crash rate roadway* and should operate safely for the foreseeable future.

Review background traffic growth

The on-going pandemic has dampened roadway traffic growth, and will continue to do so until a vaccine has been proven safe and effective. This may not happen until at least 2021. According to the 2019 Northern Regional Traffic Volume Report, overall traffic growth in Dracut has averaged 0.34%--far less than 1%-- between 2008 and 2019. Given the site's low expected future trip generation, its development will not alter Dracut's low historic traffic growth rate.

As noted in the site visit findings, Lowell Regional Transit Authority (LRTA) has a Route 10 fixed route bus service that traverses the length of Greenmont Avenue in both directions. LRTA indicates that Route 10 runs between Ayotte's Market in Tyngsborough and the Gallagher LRTA Terminal in downtown Lowell. The Gallagher regional travel hub provides connections to MBTA commuter rail service. Inbound and outbound stops are located approximately 500 feet east and west of the future site driveway. Weekday bus service is provided approximately between 6 AM to 7:30 PM. An excerpt from the May 2020 Dracut Master Plan summarizes information about the Route 10 fixed route service. It contributes 27 trips per day to the background traffic on Greenmont Avenue.

Table 4.14: LRTA Fixed Route Service within Dracut

Route Number	Route Name	Daily Trips		Average Daily Ridership	
		Weekday	Saturdays	Weekday	Saturdays
10	Dracut/Tyngsborough	27	20	170	80

Review the adequacy of future traffic operations at the site driveway

According to the latest site plans, the site driveway will be 24 feet wide and have 25' curb radii at its intersection with Greenmont Avenue. An on-site 5-foot wide sidewalk terminating in a wheelchair ramp on the east side of the site driveway at Greenmont Avenue will also be constructed. Based on the very low future site driveway volumes during the morning and afternoon peak hours, we project future traffic operations of the driveway at Greenmont Avenue will likely to be very good during the busiest peak hours. We project each motorist will wait less than 5 seconds to exit the future site driveway during the peak 15-minute periods of the morning and afternoon peak hours (i.e., level of service 'A').

We also project that the Greenmont Avenue intersections with Pleasant and Bridge Streets should also operate acceptably during peak hours. Certainly, with fewer than 10 vehicles approaching each intersection during peak hours—averaging one vehicle every six minutes or more -- there will be very little difference between traffic operations with or without the development of this site.

During the site visit, little delay was encountered making either left or right turns out of both Pleasant and Bridge Streets. Only one crash has been reported at each of these intersections during the past five years.

Assess the adequacy of off-site traffic mitigation measures

Again, given the low volumes projected from the site, few additional safety mitigation measures are warranted. The site plan includes a stop sign augmented by a stop line at the future driveway intersection with Greenmont Avenue.

We recommend that the Town of Dracut keep vegetation in the roadway layout along the site frontage at 144 Greenmont Avenue trimmed to less than 3.5' in height. This should be done near the site driveway to ensure adequate sight lines for vehicles exiting and entering the driveway. Should a bus stop waiting shelter be provided, we recommend ensuring adequate sight lines through it looking to the left from the site driveway.

Additionally, we recommend that the Town of Dracut consider the following *optional* low-cost traffic safety mitigation measures to enhance the safety of the site's future traffic operations:

- **Consider providing a new crosswalk using Dracut's standard yellow crosswalk design across Greenmont Avenue to the east side of the site driveway.** This is where a wheelchair ramp is proposed on the latest site plan and would be used by any pedestrians using the site sidewalk on the east side of the driveway by either tenants or visitors.

- **Concurrently, consider requesting LRTA to provide a new bus stop on Greenmont Avenue in front of the site serving both sides at the new crosswalk.** A route map alteration is not required since the bus already travels in front of the site access driveway, and bus operations would be minimally affected as the demands are not expected to be excessive. A new bus stop would make bus use much more convenient for the Dracut Senior Housing site.
- **Consider adding a double yellow centerline and 2' stripes for a shoulder on both sides of Greenmont Avenue to delineate a narrow walking area for pedestrians on both sides of the street.** While 10 feet is narrow for a travel lane, it will be better to encourage motorists, even the buses, to move to the left when seeing pedestrians. Provide a break in the proposed centerline at the site driveway and again at its intersection with Ontario Avenue.

Review of the site plan circulation features

The latest Dracut Senior Housing site plans call for providing a total of 77 parking spaces or approximately 1.28 parking spaces per unit. Of these spaces, eight will be HP/van accessible spaces, twice that required by ADA/MAAB. We understand that a waiver will be sought to provide fewer than two parking spaces per unit as required under Dracut zoning. The waiver request for a smaller parking supply is reasonable and acceptable.

The Institute of Transportation Engineers Parking Generation, 5th Edition, Land Use Code 252 is referenced for estimating parking demands for an Attached Senior Housing site with 60 units. We calculate this site may generate demands for an estimated *37 spaces occupied* during its peak weekday demand period between 10 PM and 8 AM. Consistent with this finding, we note that Dracut's adopted Master Plan prepared by NMCOG recommends revisiting the Town's parking requirements to reduce parking supply requirements in an environmentally friendly manner. Therefore, the proposed 77-space parking supply should be more than sufficient to accommodate the site's peak parking demands. Post construction, space usage should be monitored during the site's peak demand periods at full occupancy to see if additional parking spaces can be removed, and either converted to green space or pervious pavement.

With a circular drive at the front of the new building and loop design of the rear parking lot, the site plan's features for accommodating loading/moving van, parking maneuvers, emergency access, trash removal, and turn-around features are acceptable. All parking aisles and driveways are 24 feet wide and parking spaces will typically be 10 feet wide by 20 feet long. Hazardous backing maneuvers by any trucks accessing the site are minimized by the design. The site has very generous aisles and parking spaces designed to accommodate potential driving limitations of its senior citizen residents. Grades of the site's driveways are all reasonable and acceptable.

Sidewalks 5 feet in width are included both adjacent to the building, and along the east side of the site driveway. The site plans fully comply with or exceeds minimum applicable ADA and MAAB

criteria. Accessible spaces are situated to be the most convenient of the site's parking supply and minimize the lengths of accessible routes. With the site's very low projected vehicle traffic generation, site-generated pedestrians, or bicyclists who use the site driveway and utility corridor to access Greenmont Avenue or Bridge Street will be able to do so safely. Even the 'compact car' spaces at 9'X18' are generously designed and considered 'standard' parking spaces in most other settings.

There will be a sidewalk on the east side of the driveway and a couple of clearly marked on site crosswalks. One will provide pedestrian access to the gated 10' wide emergency/utility access corridor gated for emergency and utility vehicle use only. The other on-site crosswalk is for pedestrians to cross the driveway to the east sidewalk accessing Greenmont Avenue. Even if pedestrians were to walk on the site driveway, during the worst traffic peak hours they will be encountering only one vehicle every 3 to 4 minutes. The access driveway and its lighting features should provide a very safe walking environment. The only site plan suggestion we'd make is to provide some on-site bicycle parking to encourage some neighborhood cycling by residents or visitors.

Conclusions

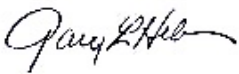
To summarize, the site's proposed parking and backing areas are consistent with good parking layout design practices. The proposed site plan is a great example of a well-conceived traffic circulation plan for senior citizens.

Based on our site review and volume information from MassDOT, NMCOG, and the recently adopted Dracut Master Plan, this site will provide excellent access for its tenants. By making a few optional minor low cost changes on Greenmont Avenue, this site's generated traffic should operate safely and efficiently for the foreseeable future.

If you have any questions on the findings contained in this letter, please do not hesitate to contact me.

Regards,

Stantec Consulting Services, Inc.



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