

Ref: 8780

April 28, 2021

Mr. Brad Rawson
Director
Mobility Division
93 Highland Avenue, 3rd Floor
Somerville, MA 02143

Re: Proposed Multifamily Residential Development
73 Summer Street
Somerville, Massachusetts

Dear Michael:

Vanasse & Associates, Inc. (VAI) is providing a proposed scope of work for the Transportation Impact Study (TIS) that is to be prepared in support of the proposed multifamily residential development to be located at 73 Summer Street in Somerville, Massachusetts (hereafter referred to as the “Project”). The TIS will be prepared in accordance with the requirements of the City of Somerville *Transportation Impact Study (TIS) Guidelines* and will be completed in accordance with the Massachusetts Department of Transportation (MassDOT) *Transportation Impact Assessment (TIA) Guidelines*.

As proposed, the Project will entail the construction of a 27-unit multifamily residential development to be located at 73 Summer Street in Somerville, Massachusetts. The Project site encompasses approximately 0.33± acres of land bounded by residential properties to the north and west, Summer Street to the south and School Street to the east. The Project site was formerly operated as a gas station (A1Prime) and currently contains a vacant 1,600± square foot (sf) building (garage/convenience store) and a fuel pump island and canopy that accommodated two (2) fuel pumps (4 vehicle fueling positions), all of which will be removed to accommodate the Project.

Access to the Project site will be provided by way a driveway that will intersect the north side of Summer Street approximately 95 feet west of School Street, at the location of the existing driveway that serves the Project site. The remaining driveways that currently the Project site (an additional driveway along Summer Street located approximately 30 feet west of School Street and two driveways along School Street located approximately 30 feet and 100 feet north of Summer Street, respectively) will be closed in conjunction with the Project, thereby reducing the number of conflict points, particularly for pedestrians and bicyclists. On-site parking will be provided for 18 vehicles, which complies with the parking requirements of Article 4, *Mid-Rise Districts*, of the Somerville Zoning Ordinance for a residential development within a Transit Area.

In order to determine the trip characteristics of the Project, trip-generation methodologies established by the Institute of Transportation Engineers (ITE)¹ were used. ITE Land Use Code (LUC) 221, *Multifamily Housing (Mid-Rise)*, was used to develop the base trip characteristics of the Project.

¹*Trip Generation*, 10th Edition; Institute of Transportation Engineers; Washington, DC; 2017.

Given the availability of public transportation services to the Project site, the interconnected network of sidewalks and bicycle accommodations, it is expected that a portion of the residents of the Project will use public transportation services, walk or bicycle, thereby reducing the volume of traffic that may be associated with the Project. In order to determine the proportion of residents of the Project that may use an alternative mode of transportation to single-occupancy vehicles (SOVs), travel mode data obtained from the 2015-2019 American Community Survey (ACS) for the Census Tract that contains the Project site (Census Tract 3511) was reviewed. Based on a review of this data, the following commuting modes were identified for workers age 16 or older that reside within the City:

- Single-occupant vehicle: 33.7%
- Car/vanpool/taxi/other: 7.0%
- Public transportation: 27.1%
- Walk: 13.3%
- Bicycle: 10.7%
- Worked at home: 8.2%

According to the ACS, approximately 66 percent of workers that reside in the Census Tract reported that they used an alternative mode of transportation to SOV to travel to/from work, with approximately 7 percent participating in a car or vanpool, 27 percent using public transportation (transit), 13 percent walking, 11 percent bicycling and 8 percent reporting that they work at home.

In order to account for the use of alternative modes of transportation to SOVs, the base ITE trip-generation calculations for the Project were first converted to person trips using a vehicle occupancy ratio of 1.08 persons per vehicle, which was obtained from the ACS, and were then disseminated to the modes of transportation that are accessible to the residents of the Project: public transportation (transit), pedestrian, bicycle and automobile.

In order to provide a conservative (high) analysis condition from which to assess the potential impact of the Project on the transportation infrastructure, it was assumed that 55 percent of the trips generated by the Project would consist of automobile trips (vs. 40.7 percent per the ACS data inclusive of SOVs and car/vanpool/taxi), with 25 percent of trips assumed to be made using public transportation and 20 percent consisting of pedestrian/bicycle trips.

Table 1 summarizes the trip characteristics of the Project using the above methodology.



Table 1
TRIP-GENERATION SUMMARY

Trip Period/Direction	ITE Trips ^a	Person Trips				Automobile Trips ^c
		Total Person Trips ^b	Automobile Trips (55%)	Transit Trips (25%)	Pedestrian/Bicyclist Trips (20%)	
<i>Average Weekday Daily:</i>						
Entering	73	79	43	20	16	40
<u>Exiting</u>	<u>73</u>	<u>79</u>	<u>43</u>	<u>20</u>	<u>16</u>	<u>40</u>
Total	146	158	86	40	32	80
<i>Weekday Morning Peak Hour:</i>						
Entering	2	2	1	1	0	1
<u>Exiting</u>	<u>7</u>	<u>8</u>	<u>4</u>	<u>2</u>	<u>2</u>	<u>4</u>
Total	9	10	5	3	2	5
<i>Weekday Evening Peak Hour:</i>						
Entering	8	9	5	2	2	5
<u>Exiting</u>	<u>5</u>	<u>5</u>	<u>3</u>	<u>1</u>	<u>1</u>	<u>3</u>
Total	13	14	8	3	3	8

^aBased on ITE LUC 221, *Multifamily Housing (Mid-Rise)*, 27 dwelling units.

^bITE vehicle trips x vehicle occupancy ratio (VOR) of 1.08.

^cAutomobile person trips divided by 1.08.

As can be seen in Table 1, after applying appropriate adjustments to account for the use of alternative modes of transportation to SOVs, the Project is expected to generate approximately 80 automobile trips, 40 transit trips and 32 pedestrian/bicyclist trips on an average weekday (two-way, 24-hour volumes). During the weekday morning peak hour, the Project is expected to generate 5 automobile trips (1 vehicle entering and 4 exiting), 3 transit trips and 2 pedestrian/bicyclist trips. During the weekday evening peak hour, the Project is expected to generate 8 automobile trips (5 vehicles entering and 3 exiting), 3 transit trips and 3 pedestrian/bicyclist trips.

As mentioned previously, the Project site was formerly operated as a gas station. Table 2 provides a comparison of the traffic volumes of the Project to those of the former use for context purposes only. In accordance with the City of Somerville *Transportation Impact Study (TIS) Guidelines*, ***a credit will not be taken for the vehicular trips associated with the former use.***



Table 2
TRAFFIC-VOLUME COMPARISON

Time Period/Direction	Vehicle Trips		
	(A) Proposed Multifamily Residential Development ^a	(B) Former Gas Station ^b	(A-B) Difference
Average Weekday Daily	80	688	-608
Weekday Morning Peak Hour	5	41	-36
Weekday Evening Peak Hour	8	56	-48

^aSee Table 1

^bBased on ITE LUC 944, *Gasoline/Service Station*; four vehicle fueling positions.

As can be seen in Table 2, in comparison to the former use that operated at the Project site, the Project is expected to generate approximately 608 fewer vehicle trips on an average weekday, with 36 fewer vehicle trips expected during the weekday morning peak hour and 48 fewer vehicle trips expected during the weekday evening peak hour. Again, no credit is being sought for the proposed Project and these numbers are being presented for context only.

Attached is the proposed scope of work for the TIS for the Project that will be undertaken under my direct supervision for your review and approval. If you should have any questions regarding the proposed scope of work for the TIS or the trip-generation calculations for the Project, please feel free to contact me.

Sincerely,

VANASSE & ASSOCIATES, INC.



Jeffrey S. Dirk, P.E., PTOE, FITE
Managing Partner

Professional Engineer in CT, MA, ME, NH, RI and VA

JSD/jsd

Attachment

cc: N. Ogonowsky – Trax Development (via email)
File



**73 SUMMER STREET
TRANSPORTATION IMPACT STUDY
DRAFT SCOPE OF WORK
APRIL 28, 2021**

VAI will provide Traffic Engineering and Transportation Planning Services in support of the proposed multifamily residential development to be located at 73 Summer Street in Somerville, Massachusetts. The TIS will be prepared in accordance with the requirements of the City of Somerville *Transportation Impact Study (TIS) Guidelines* and will be completed in accordance with the Massachusetts Department of Transportation (MassDOT) *Transportation Impact Assessment (TIA) Guidelines*. The following is a summary of the specific work effort and tasks that will be undertaken in preparing the TIS:

- Review previous studies of the area, including studies by other consultants, the State, regional planning agencies, and the local community.
- Visit the site to update available information and observe factors that can affect access, circulation, and the selection of potential improvement strategies.
- Gather physical and operating information for area roadways which will include:
 - Traffic volumes
 - Roadway geometrics
 - Traffic operating parameters
 - Speed limits
 - Sight distance measurements
 - Pedestrian and bicycle facilities
 - Public transportation services
- Complete an inventory of on-street parking within a one block distance of the project site, noting the number of parking spaces and any parking limitations or restrictions.
- Obtain a 72-hour (Thursday through Saturday) automatic traffic recorder count on School Street and Summer Street in the vicinity of the project site in order to evaluate traffic volumes, vehicle travel speeds, and vehicle classification along these roadways over an extended period.
- Obtain manual turning-movement and vehicle classification counts for a two-hour weekday morning period (7:30 to 9:30 AM) and a two-hour weekday evening period (4:30 to 6:30 PM) at the following intersections:
 - Summer Street at School Street
 - School Street at Avon Street
- Existing traffic volumes will be seasonally adjusted to average-month conditions, if necessary, in accordance with MassDOT requirements, and will be further adjusted following MassDOT's guidance for the use of traffic counts conducted during the COVID-19 pandemic and the Governor's phased "Reopening Massachusetts" strategy.
- Obtain 12-hour (7:00 AM to 7:00 PM) pedestrian and bicycle counts on a weekday on Summer Street at School Street at the proposed entrance(s) to the project. If the data cannot be collected during the month of April, May, September, or October, a second set of counts will be conducted during these months as a part of the conditions of approval of the project.



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- Perform parking demand observations of on-street parking utilization for roadways within one block of the project site. The observations will be performed for a two-hour weekday morning period (6:00 to 8:00 AM) and a two-hour weekday evening period (5:00 to 7:00 PM).
- Complete an inventory of available public transportation services, service routes and ridership information (as available) for services located within 0.5-mile walking distance of the project site.
- Obtain motor vehicle crash data for the study area roadways and intersections for the most recent five-year period available from MassDOT and/or local police department records. Detailed crash rate calculations will be performed for each of the study intersections. In addition, a review of the MassDOT high crash location database will also be undertaken for the study area.
- Estimate future No-Build traffic volumes from historic traffic counts and from information on recently approved or proposed projects. Increases in background traffic growth will then be established and applied to the existing traffic-flow networks to develop the base future No-Build analysis networks. The future conditions horizon year shall be established as a seven-year projection from the base year (existing condition) in accordance with MassDOT guidelines.
- Estimate trips generated by the project based on trip-generation data available from the Institute of Transportation Engineers (ITE)² or other appropriate source for each analysis period (average weekday and weekday morning and evening peak hours). The trip estimates will be disseminated to the modes of transportation that are available to the project site (i.e., automobile, transit, pedestrian, and bicycle) using travel mode data obtained from the U.S. Census, the municipality or other appropriate source. Automobile trips expected to be generated by the project will be added to the future No-Build traffic volumes to establish the Build condition traffic volumes.
- Assess volume-to-capacity ratios, level of service, and vehicle queuing for existing and future conditions at the study area intersections and project driveway(s). The traffic analysis will be based on the existing street system and any planned roadway improvements. The extent and nature of any system deficiencies will also be identified. The analysis will be formatted using the accepted *Highway Capacity Manual* (HCM)³ methodology and associated software. The following analysis conditions will be examined:
 - Existing conditions – 2021
 - Build conditions – 2021 with the proposed Project
 - Build conditions with Mitigation - 2021 with the proposed Project
 - Design Year Build conditions – 2028 with the proposed Project
 - Design Year Build conditions with Mitigation – 2028 with the proposed Project
- Complete a Bicycle Level of Traffic Stress (BLTS) analysis for the study area roadway segments and intersections within the study area following the methodology outlined in the City of Somerville *Transportation Impact Study (TIS) Guidelines*.

²*Trip Generation*, 10th Edition; Institute of Transportation Engineers; Washington, DC; 2017.

³*Highway Capacity Manual*, National Academy of Sciences, Transportation Research Board; Washington, D.C.; 2010.



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- Complete a pedestrian/ADA analysis for the study area roadways. The analysis will be performed following the Pedestrian Level of Traffic Street (PLTS) tool provided in the City of Somerville *Transportation Impact Study (TIS) Guidelines*.
- Perform a sidewalk and pedestrian delay analysis for the signalized study area intersection(s) following the methodology defined in the HCM and associated software. This analysis shall include an evaluation of the programmed pedestrian crossing time vs. current standards.
- Assess transit access and capacity for transit services located within ½ mile of the project site. The transit analysis shall include the walk time to the transit stop, average wait time and conditions of the stop or station. If available, on-time performance and average occupancy of each route will be provided.
- Perform sight distance measurements at the site driveway intersection(s) in accordance with American Association of State Highway and Transportation Officials (AASHTO)⁴ standards. Recommendations will be made as necessary in order to provide the required lines of sight.
- Define at a conceptual level off-site transportation infrastructure improvements that may be necessary to: i) provide safe and efficient access to the project; ii) address current deficiencies; and iii) accommodate project-related traffic (motor vehicles, pedestrians and bicyclists, as appropriate).
- Develop the framework of a Transportation Demand Management (TDM) program for the project that will include specific measures that are designed to encourage the use of alternative modes of transportation to single occupant vehicles (i.e., public transportation, walking, bicycling, and car/vanpooling).
- Perform a parking demand analysis for the project using data obtained from the Urban Land Institute (ULI),⁵ ITE,⁶ the local zoning ordinance, or other appropriate source. The overall peak parking demand will be identified for the project and will be compared to the local zoning requirements for parking and the proposed parking supply. Where a parking shortfall is identified, a parking management plan will be developed in order to reduce the projected parking deficit.

In addition, VAI will prepare a Transportation Access Plan (TAP) and a Mobility Management Plan (MMP) for the project in accordance with the City of Somerville *Transportation Access Plan Requirements*.

The TAP will include a technical memorandum that will describe the access to the project site for each mode of transportation (pedestrians, bicycles, motor vehicles, transit riders and loading/garbage) and justify any changes that are to occur within the public right-of-way, including signs, pavement markings, parking supply or regulations, street furniture, etc. Illustrative Site Plans and color coded graphics shall accompany the TAP to describe the required information.

⁴*A Policy on Geometric Design of Highway and Streets*, 7th Edition; American Association of State Highway and Transportation Officials (AASHTO); 2018.

⁵*Shared Parking*, Second Edition; Urban Land Institute; Washington, D.C.; 2005.

⁶*Parking Generation*, 5th Edition; Institute of Transportation Engineers; Washington, D.C.; January 2019.



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The MMP will be formatted as a report that will include the following information: *Local Transportation* – description of public transportation resources that are within walking distance of the project site and the bicycle infrastructure that services the site; *Transportation Assumptions* – summary of the trip generation, current mode split, and parking demands used in the TIS; *Trip Distribution* – illustrative site plan showing the location of vehicle parking, bicycle parking, principal entrances and loading and service areas, and the anticipated distribution of trips by mode for all access points; *Mobility Management Commitments* – summarize the commitments to reasonable efforts to reduce motor vehicle trips to 50 percent or less; *Monitoring and Annual Reporting* – define the elements of the annual monitoring and reporting program to demonstrate compliance with the trip-reduction goal.

