

Ref: 8393

July 31, 2020

Mr. Daniel Danesh
Danesh, LLC
500 Harvard Street
Brookline, MA 02446

Re: Responses to Peer Review Comments, 500 Harvard Street
Brookline, Massachusetts

Dear Mr. Danesh:

Vanasse & Associates, Inc. (VAI) is pleased to submit responses to the June 26, 2020 letter from Environmental Partners (EP) and the June 17, 2020 letter from Walker Consultants (WC), the town of Brookline's Peer Review consultants for traffic and parking. For ease of review, we have listed the comments followed by our responses. In addition, updated graphic exhibits are included in the Appendix attached to this letter.

EP Peer Review Letter – June 26, 2020

Existing Conditions

EP Comment 1: *“VAI did not study the roadways in the surrounding neighborhood despite the proposed driveway location requiring vehicles to exit onto a one-way road through the neighborhood. EP recommends consideration be made for site traffic impacts to safety for the cut-through route of exiting site traffic”*

VAI Response: It is important to note that there will only be parking for six (6) vehicles on site. Trips associated with these six parking spaces will be minor and average one vehicle every 10 minutes during the peak hours. Beyond the driveway, these additional trips will not be noticed on the roadway. There may be some confusion regarding the volume of traffic accessing the driveway, as the traffic networks conservatively assigned all (retail and residential) trips to the driveway when only the residential trips will have access to the garage and driveway. Therefore, site-generated and 2027 Build traffic volume networks have been updated to show that the retail trips will not access the site via the driveway. In fact, since the retail uses planned are to be neighborhood accessory-type stores, most of the trips are expected to be made via walking from nearby residences and not from driving. Figure 7R in the Appendix shows the site-generated networks while Figure 8R shows the 2027 Build networks.

As shown in Figure 7R, 3 vehicles exit the site during the weekday morning peak hour and 2 vehicles exit during the weekday evening peak hour. It is reasonable to assume only a fraction of this exiting traffic would desire to access Harvard Street directly. Conservatively assuming 50 percent of traffic desires to access Harvard

Street directly after exiting the proposed site, indicates that 1 to 2 vehicles during the peak hours would travel Kenwood Street to Columbia Street, just as the existing residents living on Kenwood Street currently do. The impact of 1 to 2 additional vehicles, even on residential streets like Kenwood Street, is negligible and therefore does not justify expanding the study area.

Existing Traffic Data

EP Comment 2: *“EP notes that due to the difference in use for different type of roadways, the seasonal fluctuations may vary between that of an interstate and that of an urban principal arterial, such as Harvard Street. We would typically recommend referencing the MassDOT 2019 Weekday Seasonal Factors Report as a secondary source; however, as the MassDOT report indicates traffic volumes for these types of roadways are approximately 3% lower than the average month, the 4% increase VAI used presents a more conservative approach.”*

VAI Response: Town’s consultant agrees with VAI on this item.

EP Comment 3: *“EP requests the date the traffic counts were performed.”*

VAI Response: The counts were conducted on February 27, 2020 as shown on the summary count sheets which were provided in the Appendix of the March and May studies.

EP Comment 4: *“EP notes that one (1) vehicle out of 11 existing vehicles during the weekday evening peak hour took an illegal left-turn from the driveway on Kenwood Street to access Harvard Street traveling in the opposite direction of the one-way roadway. Due to the configuration of the neighborhood roadways as described in the previous section, one could speculate that some residents of the proposed project may also take an illegal left-turn out of the proposed Kenwood Street driveway to avoid traveling the inconvenient and long travel route through the Kenwood Street, Columbia Street and Verndale Street neighborhoods to access Harvard Street”*

VAI Response: A “No Left Turn” sign will be posted indicating left-turns are prohibited from the site driveway.

EP Comment 5: *“EP recommends including ATR counts, which would provide documentation of the vehicles speeds in the study area necessary to determine sight distance”*

VAI Response: The speeds of vehicles turning onto Kenwood Street from Harvard Street were measured on July 13, 2020 during the weekday evening peak hour from 5:00 PM to 6:00 PM and July 14, 2020 during the weekday morning peak hour 7:30 AM to 8:30 AM which were recorded to be the peak hours from the February counts. A total of 40 observation were made during each peak hour. The radar gun used to record vehicle speeds does not record speeds under 10 miles per hour (mph). A number of observation were made indicating that vehicles were driving under 10 mph while executing the turn from Harvard Street to Kenwood Street. To be conservative it was assumed that these vehicle were all traveling 9 mph. The 85th percentile speed during the weekday morning peak hour was calculated to be 12.5 mph and during the weekday evening peak hour the 85th percentile speed



was calculated to be 11.83 mph. Therefore to calculate the stopping sight distance (SSD) a speed of 13 mph was used. Adequate SSD based on 13 mph is 64 feet. The sight distance measured was 69 feet; therefore, adequate SSD is provided.

Sight Distance

EP Comment 6: *“EP recommends providing documentation of travel speeds in order to properly determine whether or not there is adequate sight distance.”*

VAI Response: See response to comment 5.

EP Comment 7: *“EP also requests that a sight distance triangle be shown on plan to illustrate the intended sight lines for review”*

VAI Response: Sight distance triangles are shown on Figure 4R in the Appendix to illustrate the sight lines from the driveway.

EP Comment 8: *“Regardless of vehicle speeds, EP recommends prohibiting parking along Kenwood Street between Harvard Street and the site driveway to allow for optimal sight lines”*

VAI Response: This decision is at the Town’s discretion; however, Kenwood Street is 24 feet wide which is wide enough to permit vehicles to pull into the street if there is a vehicle parked between the driveway and Harvard Street. There are numerous driveways along Kenwood Street where parking is not prohibited, and this same situation exists.

Future Traffic Growth

EP Comment 9: *“EP requests the backups for the traffic volumes generated from the other developments in order to verify calculations.”*

VAI Response: Backup information for the traffic volumes generated from the other developments are provided in the appendix.

Project-Generated Traffic

EP Comment 10: *“The Memo indicates that the projections presented in Table 3 represent a conservative scenario, as the proposed project will have only six (6) parking spaces for residents, which would lead to most residents not having vehicles and relying on alternative forms of transportation. While EP agrees that many residents will likely use alternative forms of transportation as reflected in the above trip reductions, we do not agree that there is a direct correlation between the Applicant’s proposed number of parking spaces and the number of vehicles that realistically may be owned by residents, nor does the project as currently proposed meet the zoning requirements for parking spaces as discussed in Walker Consultants’ Parking Peer Review. As such, we recommend removing this statement from the memo.”*



VAI Response: Potential residents will be informed at the time of initial viewing whether there are parking spaces available for lease; if they have one or more vehicles, this development may not be right for them. This development is proposed with limited parking to minimize the presence of vehicles in this area.

This development is also consistent with recent trends where several residential projects in Brookline and elsewhere in the Greater Boston area have been approved with no parking or reduced parking. Examples include 384 Harvard Street which provided 0 parking for 62 age-restricted units, 445 Harvard Street which provided 20 spaces for 25 units or a ratio of 0.8 spaces per unit, and 455 Harvard Street which provided 12 spaces for 17 units or a ratio of 0.7 spaces per unit. The following table provides these developments and others that indicate a reduced need for parking at residential developments in Brookline.

**Table EP-10
 AREA RESIDENTIAL DEVELOPMENT PARKING RATIOS**

Address	Parking Spaces	Number of Units	Parking Ratio	Comments
* 524 Harvard St.	0	3	0%	
* 514-516 Harvard St.	0	16	0%	
* 8 Verndale St.	1	7	14%	
455 Harvard St.	10	17	59%	Mixed Use, 1,800 sf Retail
420 Harvard St.	23	25	92%	Mixed Use, 5,800 sf+ Retail
* 395 Harvard St.	0	39	0%	Mixed Use
* 385-389 Harvard St.	0	20	0%	Mixed Use
384 Harvard St.	14	62	23%	Mixed Use, 5,000 sf+/-
* 524 Harvard St.	0	3	0%	
* 514-516 Harvard St.	0	16	0%	

*** Existing multifamily**

The location of these developments is shown in Figure EP-10 in the Appendix. Several of these developments had a TDM Plan designed to reduce the need for vehicle ownership, similar to that which the Project is providing. This is in response to a desire to address traffic congestion and the market for carless tenants by limiting parking supply for residential developments.

There is also evidence that there is reduced need for parking, based on a study performed by the Metropolitan Area Planning Council (MAPC), which identified nearly 30 percent of parking spaces go unused at residential developments in the metro Boston region, including Brookline.

In addition, there are two Brookline Warrant Articles that are aimed at reducing the effects of personal vehicles and to eliminate off-street parking requirements in the Transit Parking Overlay District. Brookline Warrant Article 35, which was held over from the spring annual town meeting and will be voted on in November, would Amend Article VI of the Town’s Zoning By-Laws to eliminate off street residential parking minimums in the Transit Parking Overlay District. We understand this article has support among town meeting members and shows the



trend is to consider less parking rather than more. Warrant Article 31, titled “Resolution to respond to climate change by prioritizing health, access, and equity of Brookline’s public ways”, was passed on December 5, 2019. The warrant calls for the Town to prioritize safe, space-efficient, and energy efficient movement of people and goods over the movement and parking of private vehicles. By providing reduced parking on-site the development is aligned with the goal of WA31.

It is also important to note that while EP agrees with the trip generation as calculated in the assessment, it is extremely conservative and likely over-estimates the project trips. In addition, the traffic generated by the existing restaurant on site appears to have gone unnoticed. The trips expected to be generated by this development with six parking spaces will result in a reduction of traffic associated with this site.

EP Comment 11: *“The reduction in trip generation relies heavily on the assumption that many residents will use public transportation. While EP agree with this assumption, public transportation ridership trends are unclear due to the COVID-19 crisis. Although one would assume ridership will return at some point in the future, as this crisis is ever-changing, there has yet to be a determination as to how this will be affected long-term.”*

VAI Response: While the COVID-19 pandemic is currently having an effect on transit ridership, it is also resulting in more workers staying home and/or working remotely. In the absence of any definitive data indicating otherwise, it is recommended that traffic analyses and reviews be based on assumptions of a return to pre-COVID-19 conditions by 2027, the future condition horizon year.

EP Comment 12: *“Table 4 includes a column to compare the existing site trips to the proposed site trips based on the proposed number of parking spaces (six) rather than the trip generation, which indicates an even smaller number of net wen trips. For the reasons outlined above and discussed in detail in the “Parking condition” section below, we recommend relying on the trip generation projections only.”*

VAI Response: The analysis is based on the trip generation projections. The comparison column based on parking spaces has been removed from Table 4. Table 4R shows the updated Trip Generation Comparison table.



Table 4R
TRIP GENERATION COMPARISON

Time Period	Proposed Site Trips ^a (A)	Existing Site Trips (B)	Net New Trips (C=A-B)
Weekday Daily	128	194 ^b	-66
<i>Weekday Morning Peak Hour:</i>			
Entering	3	2	1
<u>Exiting</u>	<u>5</u>	<u>2</u>	<u>3</u>
Total	8	4 ^c	4
<i>Weekday Evening Peak Hour:</i>			
Entering	9	8	1
<u>Exiting</u>	<u>9</u>	<u>11</u>	<u>-2</u>
Total	18	19 ^c	-1

^aFrom Table 3.

^bBased on IT LIC 932, High Turnover (Sit-Down) Restaurant; 1,732 sf.

^cBased on TMC counts conducted by VAI in February 2020.

EP Comment 13: *“EP notes that the volumes shown for “Harvard Street, south of the Site Driveway” are the actually the volumes south of Kenwood Street (not between Kenwood Street and the Site Driveway); consider revising the table for consistency.”*

VAI Response: The volumes presented in Table 6 for “Harvard Street South of Site Driveway” are indeed for Harvard Street south of Kenwood Street. Table 6R shows the correct title. In addition, with the update to the site-generated and 2027 Build networks that show the retail trips staying on Harvard Street, the trip increase table has been updated accordingly.



**Table 6R
 PEAK-HOUR TRAFFIC-VOLUME INCREASES^a**

Location/Peak Hour	2027 No-Build	2027 Build	Traffic Volume Increase Over No-Build	Percent Increase Over No-Build
<i>Harvard Street, north of Site Driveway:</i>				
Weekday Morning	904	908	4	0.4
Weekday Evening	1,008	1,016	8	0.8
<i>Harvard Street, south of Kenwood Street:</i>				
Weekday Morning	912	913	1	0.1
Weekday Evening	1,009	1,012	3	0.3
<i>Kenwood Street, west of Site Driveway:</i>				
Weekday Morning	40	43	3	7.5
Weekday Evening	61	63	2	3.3

^aTwo-way traffic total.

EP Comment 14: *“As indicated in Table 6, Kenwood Street is expected to experience a traffic volume increase of up to 15%, which could be considered significant, particularly on a low-speed, residential roadway, While EP recognizes that the volumes are relatively low and likely will not affect traffic operations, there may be a more general concern for adding cut-through traffic through the neighborhood”*

VAI Response: As indicated in Table 6R, with the retail trips removed from the driveway and garage access, the maximum percent increase in traffic on Kenwood Street is expected to be 7.5 percent which is due to an increase of 3 vehicles on Kenwood Street during the weekday morning peak hour. In addition, during 2027 No-Build conditions 61 vehicles travel Kenwood Street during the weekday evening peak hour which is approximately 1 vehicle every minute. Under 2027 Build condition the number of vehicles traveling Kenwood Street increases to 63 vehicles which is an increase of 3.3 percent. Such a minimal increase in traffic would go unnoticed by the existing users of the roadway and therefore would not impact roadway operations.

It should also be noted that the existing restaurant generates more vehicle trips during the evening peak hour than the proposed development, even with the conservative assumption regarding retail trips.

Traffic Operations

EP Comment 15: *“The Memo did not indicate the use of this software other than the outputs provided in the appendix, and as such it is unclear what version of Synchro was used. EP recommends including this information”*



VAI Response: Version 10 of the Synchro software was used. This information is provided in the bottom right of the footer of the Synchro outputs provided in the appendix of the March and May studies.

EP Comment 16: *“EP would typically recommend including the conflicting pedestrians in the analysis for the Harvard Street northbound left-turn and southbound right-turn movements as there are a significant amount of pedestrians on the Kenwood Street approach. However, given the acceptable Level of Service and the likelihood that the delay will not increase significantly due to conflicting pedestrians, alterations do not appear to be necessary.”*

VAI Response: Town’s consultant agrees with VAI’s approach on this item.

Parking Conditions

EP Comment 17: *“If only six (6) spaces were to be proposed and/or used, there would likely be many other residents who could potentially own vehicles and would have to find other parking opportunities in the Town, contributing to the already limited parking capacity. Additionally, as indicated in Walker Consultants’ Parking Peer Review, the proposed project does not meet the zoning requirements or even Census Data Tracts for parking spaces. The parking requirements necessitate further discussions in addressing comments identified in Walker Consultants’ Parking Peer Review.”*

VAI Response: See response to EP Comment 10. It is not clear what census data Walker is using for their calculations as it is not consistent with data VAI reviewed in preparation of the traffic assessment. However, this development is being proposed with limited parking to appeal to potential tenants with no personal vehicles.

Transportation Demand Management Plan

EP Comment 18: *“Public Transportation – “The Trains” section indicates the MBTA Green Line Station at Harvard Street and Commonwealth Avenue is 100 feet away; the station is 1000 feet away, please revise the typo.”*

VAI Response: The MBTA Green Line Station at Harvard Street and Commonwealth Avenue is 1000 feet away from the site and this has been corrected in the TDM Plan’s Public Transportation – The Trains section.

EP Comment 19: *“The TDM indicates that removing the curb cut on Harvard Street improves conditions by making it safer for pedestrians and bicycles as cars will not be crossing the sidewalk and bike lane to enter and exit the site. In our opinion, there are both advantages and disadvantages to a curb cut on Harvard Street versus Kenwood Street as proposed”*

VAI Response: Typical access management measures recommend the removal of curb cuts where high numbers of pedestrians, bicyclists, and bus interaction exist such as with the curb cut on Harvard Street. Accordingly, we prefer locating the vehicle access on Kenwood Street rather than Harvard Street.



EP Comment 20: *“The TDM indicates that removing the Harvard Street curb cut also provides an improvement in the addition of one metered parking space/loading zone. Though there is a benefit to having an additional metered parking space/loading zone on Harvard Street, the proposed conditions reduce the parking on Kenwood Street resulting in a balance of parking rather than a parking gain. Under existing conditions, there is approximately 40 feet between the crosswalk across Kenwood Street and the existing curb cut on Kenwood Street that allows for one legitimate parking spaces; aerial photography shows two vehicles parked at this location, with one vehicle parked in an illegitimate parking spaces as it is too close to the intersection. Under proposed conditions, in order to meet sight distance requirements, EP recommends prohibiting parking in this area. As such, the proposed condition adds one metered parking spaces on Harvard Street and removed one legitimate parking space (and in some instances an additional illegitimate parking space) on Kenwood Street.”*

VAI Response: See response to EP Comment 8. This decision is at the Town’s discretion.

EP Comment 21: *“Traffic Pattern – the Memo indicates that removing the curb cut on Harvard Street is a significant improvement to the traffic pattern as vehicles will no longer conflict with pedestrians and bicycles at the curb cut location, as described in the previous bullet. EP does not necessarily agree that this is a significant improvement to the traffic pattern. There are advantages and disadvantages to a curb cut on Harvard Street versus Kenwood Street as proposed”*

VAI Response: See response to EP Comment 19. The Applicant has directed the project access to be moved from Harvard Street in favor of Kenwood Street in the interests of reducing potential driveway conflicts with pedestrians, bicyclists, buses, and the higher traffic flow on Harvard Street.

EP Comment 22: *“Deliveries/Rideshares – one existing parking space and one new parking space are proposed along the Harvard Street side of the building for FedEx, UPS, Uber, and loading uses from 7am to 10am and metered parking during all other times. It is unclear where such uses (FedEx, UPS, Uber, and loading) will be positioned during the remainder of the day. Clarification is requested.”*

VAI Response: There are not any designated loading zones near 500 Harvard Street besides the one proposed by the Project. There are numerous residences, offices, and business along Harvard Street and not all of them have their own personal loading area. It is presumed that FedEx, UPS, Uber, and other loading will operate as they currently do along Harvard Street where specific loading zones are not designated. As this is a residential building it should not generated the same amount of deliveries as office or retail buildings, which will help reduce the number of deliveries outside the 7am to 10am window.

Recommendations and Conclusion

EP Comment 23: *“VAI indicated that the following specific areas have been evaluated as they relate to the project: i) access requirements; ii) potential off-site improvements; and iii) safety considerations. Although EP agrees with some of the conclusions,*



such as seemingly low impact to traffic operations, we are of the opinion that the three specific areas as listed by VAI overlap and require further consideration.”

VAI Response: These are typical generalizations of what are evaluated in transportation studies. It is true that the three categories have some overlapping characteristics especially as safety should be considered with all aspects of a development. Site access was determined early in the process to be provided from the Kenwood Street curb cut and reflects a desire to practice access management and close curb cuts on the already busy Harvard Street. Although there are advantages and disadvantages to both curb cuts we believe reducing conflicts on Harvard Street was the most important advantage, especially when considering safety, and outweighs the disadvantages. As the project has such a minimal effect on traffic operations in the area, off-site improvements are not warranted.

EP Comment 24: *“One could speculate that this urban-type development in combination with the inconvenient and long travel route for exiting motorist (traveling away from Harvard Street only to achieve Harvard Street access elsewhere) could potentially lead to driver frustration, and on occasion, result in isolated instances of higher speeds. If this frustration were to be experienced, it could in turn have an impact on pedestrian safety, particularly where local residents may cross the street at unmarked locations to access Coolidge Park. Provisions for additional traffic calming along the cut-through route of exiting motorists may be considered to mitigate the condition if required.”*

VAI Response: The project will add minimal vehicle traffic to an existing neighborhood whose residents already deal with the one-way road pattern of the neighborhood. If there is an existing issue of vehicles speeding on Kenwood Street, the project’s impact on this issue would be negligible and it is not the Proponent’s responsibility to fix existing issues of speeding on Kenwood Street or deficiencies in pedestrian facilities provided for Coolidge Park. In addition, two speed humps are already installed on Kenwood Street to deter drivers from speeding. The proponent will install a “No Left Turn” sign and “One-Way” sign to discourage motorists from turning left from the site driveway.

EP Comment 25: *“Alternatively, driver frustration could lead to violation of the one-way restriction to quickly access Harvard Street from Kenwood Street. Based on the TMCs, one (1) vehicle out of 11 exiting vehicles during the weekday evening peak hour took an illegal left-turn from the Kenwood Street curb cut. Without a physical restraint or enforcement, one could speculate that some residents of the proposed project may violate the one-way restriction, posing a safety hazard to unexpecting pedestrians and vehicles turning onto Kenwood Street from Harvard Street.”*

VAI Response: Signage will be posted indicating left-turns are prohibited from the site driveway.

EP Comment 26: *“While this new parking space as well as an existing parking space will accommodate FedEx, UPS, Uber, and loading uses from 7am to 10am, clarification is requested regarding where such uses will be accommodated during the remainder of the day.”*



VAI Response: See response to EP Comment 22.

EP Comment 27: *“Due to the limited sight distance for the Kenwood Street curb cut, Ep recommends mitigation to tighten the corners of the Harvard Street at Kenwood Street intersection to reduce vehicle speeds turning onto Kenwood Street. This would also shorten the crosswalk across Kenwood Street resulting in minor pedestrian improvements for the current heavy pedestrian volumes as well as the pedestrians generated by the proposed site. As part of this improvement, Americans with Disabilities Act (ADA) compliant pedestrian ramps would be required. Once designed, EP requests vehicle turning templates to verify the proposed corner radii are sufficient for turns onto Kenwood Street.”*

VAI Response: Based on the conservatively calculated 85th percentile speed of 13 mph for turning vehicles SSD needed is 64 feet and 69 feet is provided. Therefore adequate sight distance is provided and mitigation is not required.

Recommendations and Conclusion

EP Comment 28: *“As there are advantages and disadvantages to both curb cut locations, both locations would be feasible provided further mitigation is considered. EP therefore defers to Town officials and local consensus as to which driveway location better suits the needs of the Town and its residents.”*

VAI Response: See responses to EP Comments 19, 20, 21, and 27.

Responses are also provided to comments in the Walker Consultants comment letter of June 17, 2020 related to traffic operations and parking usage. These are provided below.

Where appropriate, responses to some comments are provided by Cube3 Studio in their response letter of July 23, 2020.

Walker Consultants (WC) Peer Review Letter – June 17, 2020

WC Comment 1: *“This site is in the L1.0 Zoning District, the Coolidge Corner Design Overlay District, and the Transit Parking Overlay District.*

This district and overlays require:

- I. 2.0 spaces per residential unit for 1 to 2 bedrooms units*
- II. 2.3 spaces per residential unit with 3 or more bedroom units*
- III. 10% increase of residential spaces for visitors and tradespeople*
- IV. 1 space per 200 SF of ground floor retail; maximum.*
- V. Total parking minimum requirement per Zoning for the proposed program is 68 spaces (61 residential; 7 visitor/tradespeople; 0 retail). A maximum of 9 spaces for retail parking can be provided.*



Waiver Item N in the application indicates the project is reducing the number of required spaces to 6 parking spaces for the development. The application does not provide a rationale or methodology for how the number of spaces was determined and which user group will have access to the parking.

The Traffic Assessment notes that the 6 interior spaces will be for residents. This is a ratio of 0.2 spaces per unit. One additional space is provided outside for delivery / visitor use.”

VAI Response: See response to EP Comment 10.

WC Comment 2: *“The Traffic and Parking Narrative anecdotally explains that many of the existing residents in the Applicant’s other projects do not own vehicles. The Applicant should be more definitive in defending a large reduction in required parking.”*

The Traffic Assessment indicates a proposed trip generation summary of weekday daily total vehicle trips to be 128 vehicles. This includes a reduction based on journey to work data for this census tract. It goes on to say that “most residents will not have vehicles”, but there is no data provided to support this.

The pricing and parking allocation for residents affects parking demand and is not addressed in the application materials.”

VAI Response: See response to EP Comment 10. This project is consistent with current trends in residential housing promoting additional units with a limited parking supply to minimize congestion on local roadways and is consistent with recent Brookline Warrant Articles regarding climate change and parking reductions.

WC Comment 3: *“To estimate a reasonable range of parking demand for this project, Walker has performed research based on the Census Data related to residences and vehicle ownership for this project’s location.*

In Walker’s research based on US Census review of this specific Tract 4003, we would anticipate the parking demand falling in the range of 0.7 to 0.95 spaces per unit.

However, given the proximity of this development to the Green Line transit service and that this project is rental units opposed to condominiums, this development will likely be more similar to the adjacent Census Tracts 7.03 and 7.04 just to the north in Brighton. These tracts are predominantly along the transit service and are 90% rental units, whereas Tract 4003 is only 47% rental units.

If using the Tract 7.03 and 7.04 data, an estimated parking supply would be between 0.4 to 0.6 spaces per residential unit, or 12 to 18 spaces, for this project, not including visitor or service vehicle parking. Note that price-point of the units will also impact the parking demand.”



VAI Response: See response to EP Comment 10. It is not clear what census data Walker is using for their calculations as it is not consistent with data VAI reviewed in preparation of the traffic assessment. However, the Applicant is intending for this development to appeal to potential residents without personal vehicles.

WC Comment 4: *“This zoning district further requires that in a mixed-used development 10% of the residential spaces are designated for use by visitors or tradespeople.*

The Parking Demand Management Plan and Parking Narrative indicate one new on-street parking space. For the 6 spaces provided in the garage, providing one space on-street does comply with the 10% requirement.

However, if considering the 12- to 18-space demand range noted in Item 3 above, an additional 2 spaces would be required for visitors and tradespeople. This would bring the total residential demand of 16 to 20 spaces corresponding to a ratio range to 0.47 to 0.67 spaces per rental unit.”

VAI Response: See response to EP Comment 10.

WC Comment 5: *“The development is compliant with Zoning by providing 0 spaces for retail; storefront retail in the Transit Parking Overlay district are not subject to the minimum requirements L1.0 District. While not a zoning requirement, there may be some parking demand generated by the space depending on the type of retail use. We suggest the Applicant clarify the type of retail intended for the space.”*

VAI Response: The type of retail will be a florist, dry cleaner, or some other type of neighborhood retail. The type of retail that is proposed is not a destination style facility that would generate customers or patrons from long distances by car.

WC Comment 6: *“Walker agrees with the traffic assessment findings that 62% of trips to work in Tract 4003 are by a mode other than personal vehicle. However, the Census information also suggest that some of those who take public transportation to work also own a vehicle that needs to be stored. This is reflected in the Census data indicating noted in Item 3 above suggesting that a range of 0.7 to 0.95 spaces per unit is appropriate for this tract.”*

VAI Response: See response to EP Comment 10.

WC Comments 7 through 9a are related to the garage design and are addressed in correspondence from the Project architect, Cube3 Studio.

WC Comment 9b: *“The turning maneuvers to access the spaces adjacent to the doors may affect the operation of the doors and cause queuing into the driveway or street periodically (it is recognized that the peak flow conditions are very low and likelihood of queuing is minimal but should be anticipated on occasion).”*

VAI Response: We agree with WC that due to the low number of parking spaces, it is unlikely that this vehicle-door interaction causes queuing to occur. The number of spaces indicates an average interaction of approximately once every 10 minutes.



Mr. Daniel Danesh
July 31, 2020
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WC Comments 10 and 11 are related to the garage design and are addressed in correspondence from the Project architect, Cube3 Studio.

WC Comment 12: *“We suggest the Applicant consider including electric vehicle charging stations in the garage and/or the ability to add charging stations in the future.”*

VAI Response: A conduit for electric vehicle charging will be installed and if future demand indicates the need, then a charging station can be implemented at that time.

It is anticipated that this information addresses the comments. Please feel free to contact us directly if there should be any further clarification needed.

Sincerely,

VANASSE & ASSOCIATES, INC.

A handwritten signature in blue ink, appearing to read "Scott W. Thornton".

Scott W. Thornton, P.E.
Senior Associate

A handwritten signature in blue ink, appearing to read "Derek Roach".

Derek Roach, EIT.
Transportation Engineer

Attachments – Technical Appendix

cc: Town of Brookline – Alison C. Steinfield



APPENDIX

REVISED AND NEW GRAPHIC EXHIBITS

- FIGURE EP-10
- FIGURE 4R
- FIGURE 7R
- FIGURE 8R

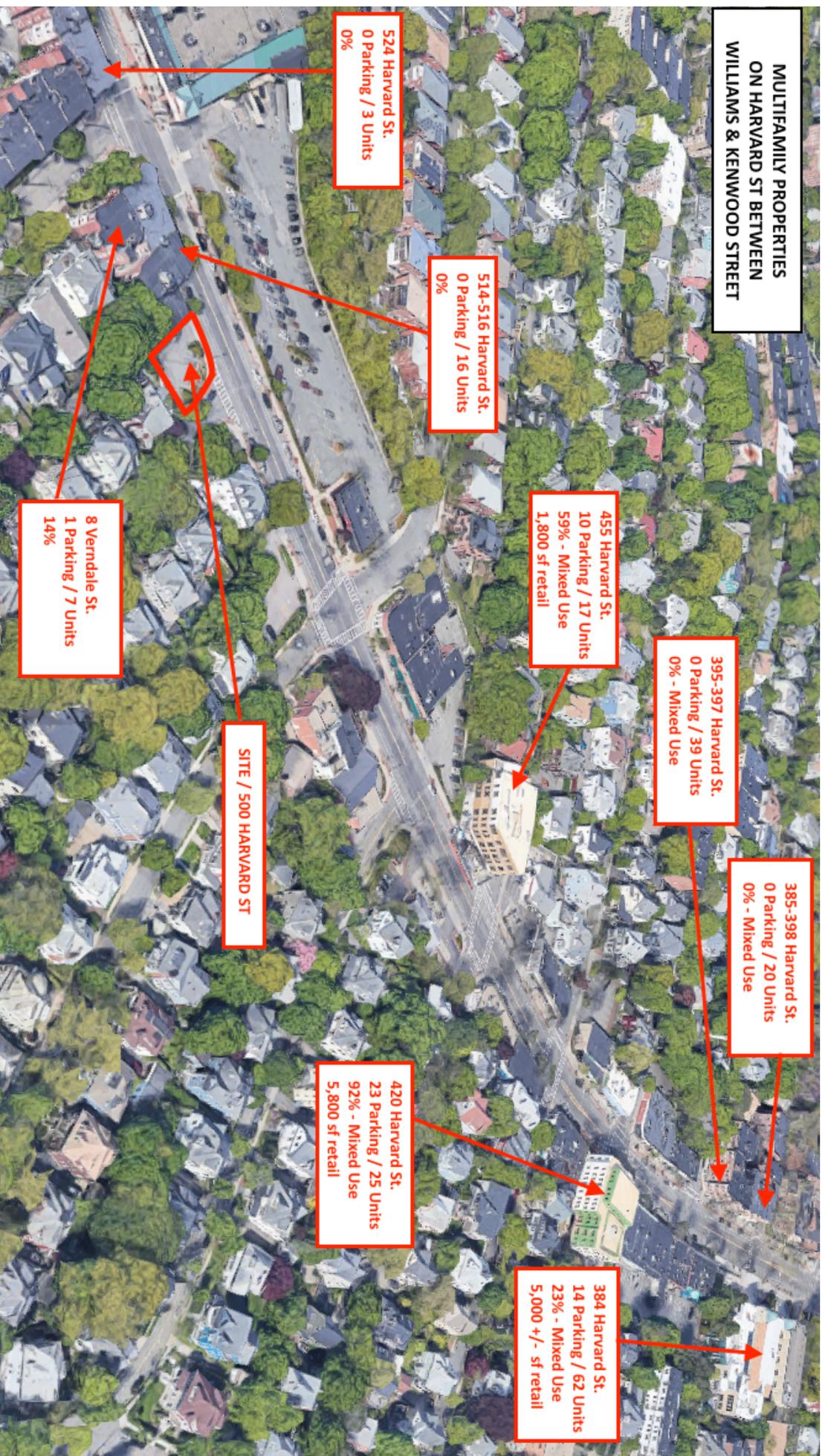
SPEED DATA

BACKGROUND DEVELOPMENTS: TRIP GENERATION AND NETWORKS

REVISED AND UPDATED GRAPHIC EXHIBITS

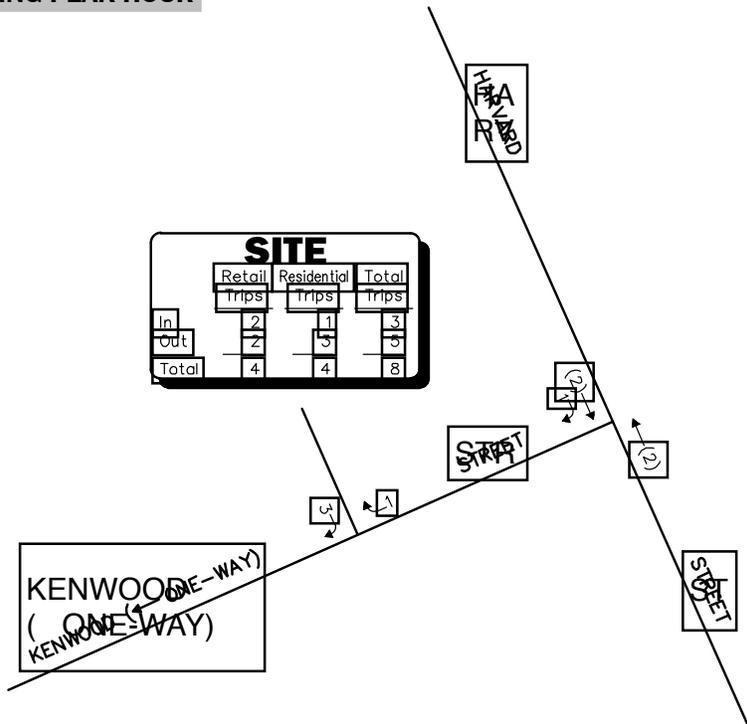
- FIGURE EP-10
- FIGURE 4R
- FIGURE 7R
- FIGURE 8R

Figure EP-10

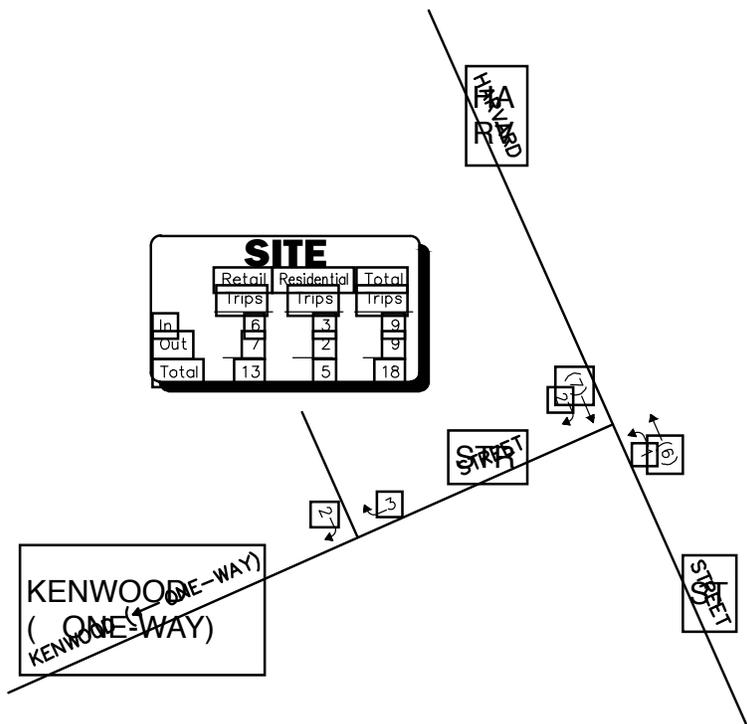


WEEKDAY MORNING PEAK HOUR

Legend:
 XX Residential
 (XX) Retail



WEEKDAY EVENING PEAK HOUR



Not To Scale



Figure 7R
 Site Generated
 Peak Hour Traffic Volumes

R:\83993\83993NT3.dwg, 7/15/2020 2:23:34 PM

SPEED DATA



Job Brookline, MA
Location Turning
Calculated By: DIR
Checked By: _____

Job # 8393
Date 7/14/2020

Intersection: Harvard Street at Kenwo
Direction: Eastbound

Speed Limit: not posted
Time of Day 7:30 - 8:30 AM
Observations 40

Speed	# of Observation	CUM. # Of OBS	% OF TOTAL OBS	CUM %
45				
44				
43				
42				
41				
40				
39				
38				
37				
36				
35				
34				
33				
32				
31				
30				
29				
28				
27				
26				
25				
24				
23				
22				
21				
20				
19				
18				
17				
16	2	2	5	100
15	1	3	2.5	95
14	1	4	2.5	92.5
13	1	5	2.5	90
12	6	11	15	87.5
11	8	19	20	72.5
10	6	25	15	52.5
9	15	40	37.5	37.5

Average: 10.725
Comments: 85% = 11.83 m.p.h.



Job Brookline, MA
Location Turning
Calculated By: DIR
Checked By: _____

Job # 8393
Date 7/13/2020

Intersection: Harvard Street at Kenwo
Direction: Eastbound

Speed Limit: not posted
Time of Day 5-6 PM
Observations 40

Speed	# of Observation	CUM. # Of OBS	% OF TOTAL OBS	CUM %
45				
44				
43				
42				
41				
40				
39				
38				
37				
36				
35				
34				
33				
32				
31				
30				
29				
28				
27				
26				
25				
24				
23				
22				
21				
20				
19				
18				
17				
16	1	1	2.5	100
15	1	2	2.5	97.5
14	2	4	5	95
13	4	8	10	90
12	6	14	15	80
11	9	23	22.5	65
10	4	27	10	42.5
9	13	40	32.5	32.5

Average: 10.975
Comments: 85% = 12.5 m.p.h.

BACKGROUND DEVELOPMENTS: TRIP GENERATION AND NETWORKS

420 Harvard St.

Apartments were used. Vehicle trip estimates were adjusted to account for transit trips and other travel mode trips. A summary of the expected vehicle trip generation is summarized in Table 3.

Table 2
EXISTING TRIP SUMMARY

Time Period	Existing Site Trips ^a
Average Weekday Daily Traffic	--
<i>Weekday Morning Peak Hour:</i>	
Entering	1
<u>Exiting</u>	<u>1</u>
Total	2
<i>Weekday Evening Peak Hour:</i>	
Entering	0
<u>Exiting</u>	<u>2</u>
Total	2

^aSource: Manual turning movement counts conducted in July 2016.

Table 3
TRIP GENERATION SUMMARY

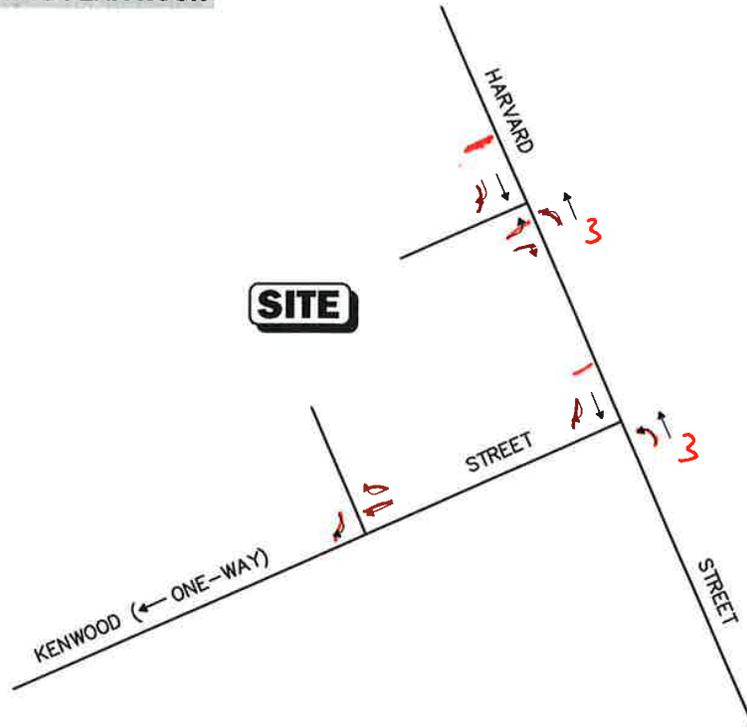
Time Period	Residential Trips ^a 36 Units (B)	Public Transit/Other Travel Mode Trips E = D*54.7% ^b	New Trips G = F/C
Average Weekday Daily Traffic	240	131	109
<i>Weekday Morning Peak Hour:</i>			
Entering			
<u>Exiting</u>	4	2	2
Total	<u>14</u>	<u>8</u>	<u>6</u>
	18	10	8
<i>Weekday Evening Peak Hour:</i>			
Entering	14	8	6
<u>Exiting</u>	<u>8</u>	<u>4</u>	<u>4</u>
Total	22	12	10

^aBased on ITE LUC 220, Apartment

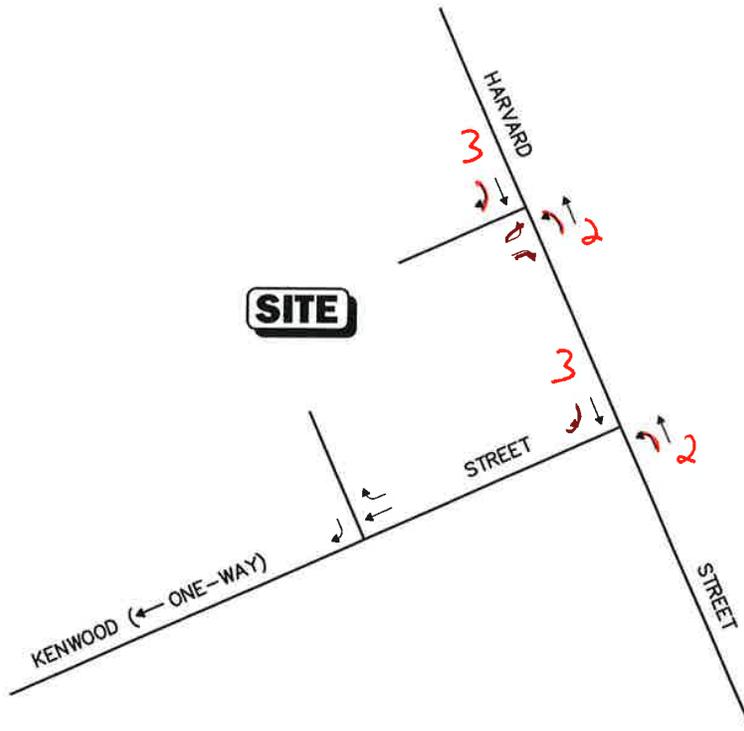
^bBased on journey to work data for Brookline obtained from the United States Census Bureau, ACS 2010-2014.

As can be seen in Table 3, the Project is expected to generate approximately 109 vehicle trips on an average weekday (two-way, 24-hour volume, with approximately 8 vehicle trips (2 vehicles entering and 6 exiting) expected during the weekday morning peak-hour. During the weekday evening peak hour the

WEEKDAY MORNING PEAK HOUR



WEEKDAY EVENING PEAK HOUR



Not To Scale

VA Vanasse & Associates inc

Figure 3

~~2020 Existing Peak Hour Traffic Volumes~~

420 Harvard Street

Background Development

445 Harvard Street

**Table 1
TRIP GENERATION SUMMARY AND COMPARISON
PROPOSED MIXED-USE DEVELOPMENT**

Time Period/Direction	Vehicle Trips		(A - B) Difference
	(A) Proposed Mixed-Use Development ^a	(B) Existing Gasoline/ Service Station ^b	
<i>Average Weekday Daily:</i>			
Entering	151	344	
<u>Exiting</u>	<u>151</u>	<u>344</u>	
Total	302	688	-386
<i>Weekday Morning Peak Hour:</i>			
Entering	4	21	
<u>Exiting</u>	<u>9</u>	<u>21</u>	
Total	13	42	-29
<i>Weekday Evening Peak Hour:</i>			
Entering	15	28	
<u>Exiting</u>	<u>14</u>	<u>28</u>	
Total	29	56	-27

^aBased on ITE LUCs 221, *Multifamily Housing (Mid-Rise)* (25 units), and 820, *Shopping Center* (4,380± sf and using the average trip rate).

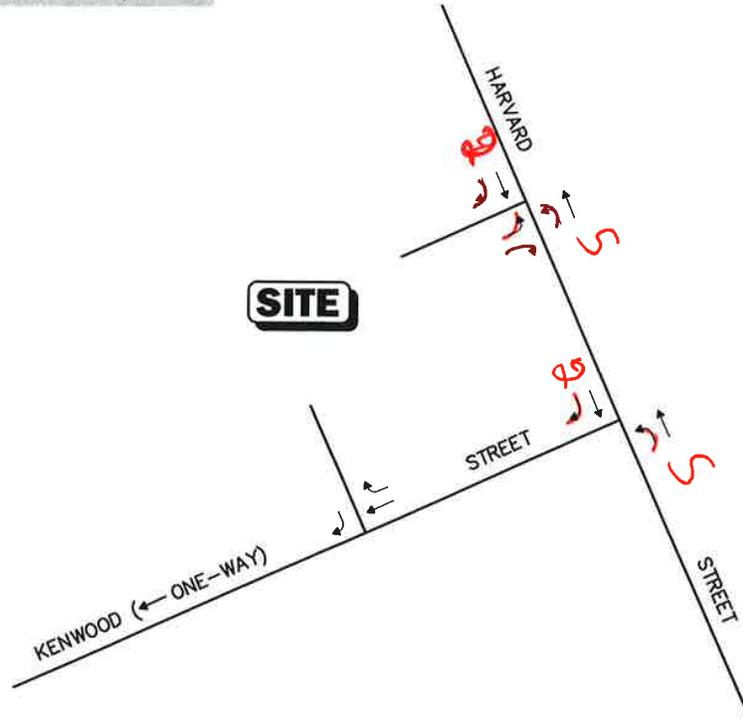
^bBased on ITE LUC 944, *Gasoline/Service Station* (4 vehicle fueling positions).

Project-Generated Traffic Summary

As can be seen in Table 1, without adjustment to account for the use of public transportation and pedestrian/bicycle trips, the Project is expected to generate approximately 302 vehicle trips on an average weekday (two-way, 24-hour volume, or 151 vehicles entering and 151 exiting), with 13 vehicle trips (4 vehicles entering and 9 exiting) expected during the weekday morning peak-hour and 29 vehicle trips (15 vehicles entering and 14 exiting) expected during the weekday evening peak-hour.

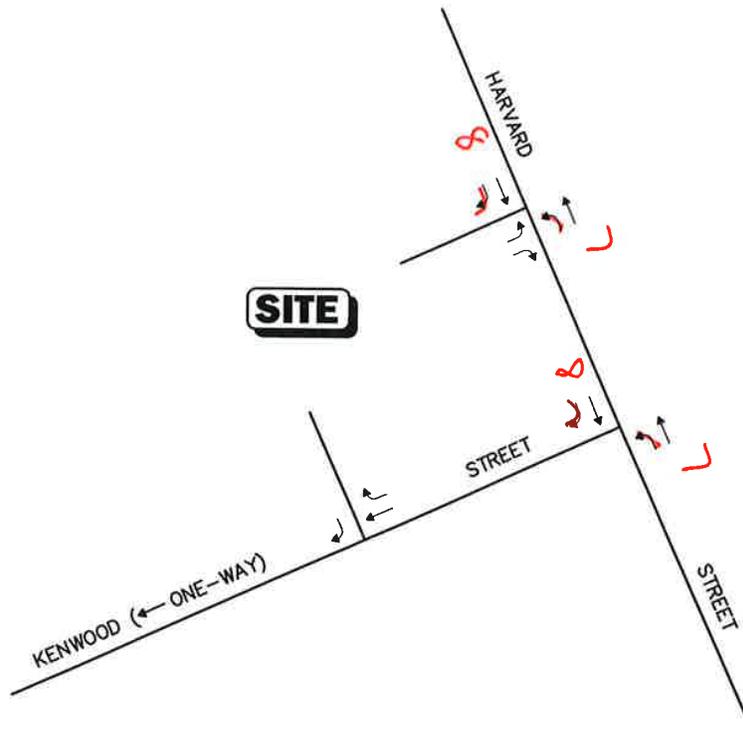
In comparison to the existing gasoline/service station that occupies the Project site, the Project is expected to result in 386 fewer vehicle trips on an average weekday (an approximate 56 percent reduction), with 29 fewer vehicle trips expected during the weekday morning peak-hour (an approximate 69 percent reduction) and 27 fewer vehicle trips expected during the weekday evening peak-hour (an approximate 48 percent reduction). Accordingly and with consideration of the use of public transportation and pedestrian/bicycle trips, it can be concluded that ***the Project represents a significant reduction in traffic over the current use of the property and, as such, would not result in a material impact (increase) in motorist delays or vehicle queuing over existing conditions.***

WEEKDAY MORNING PEAK HOUR



In 4
out 9
tot 13

WEEKDAY EVENING PEAK HOUR



In 15
out 14
tot 29



Figure 3

2020 Existing Peak Hour Traffic Volumes

445 Harvard Street
Background Development

455 Harvard St.

parked in these spaces, drivers were restricted to approximately 172 feet looking north and 113 feet looking south. However, as noted previously, a high number of vehicle crashes are not represented in the crash data; therefore motorists are able to compensate for these less than ideal sight distances. A graphic exhibit is attached identifying the sight distances available for motorists exiting Thorndike Street. It should be noted these are existing conditions and changed by the Project.

TRIP GENERATION COMPARISON

The project entails the development of 17 residential apartments and 1,735 square feet of retail space. In order to develop the traffic characteristics of the proposed project, trip-generation statistics published by the Institute of Transportation Engineers (ITE)² for LUC 220, Apartment and LUC 826, Specialty Retail center were used to develop the traffic characteristics of the project. A reduction in the vehicle trip generation estimates due to use of public transit or other modes of travel was included. This reduction was based on journey to work data for Brookline obtained from the United States Census Bureau ACS 2010-2014. Table 4 summarizes the trip generation for the Project.

**Table 4
PROPOSED TRIP GENERATION SUMMARY**

Time Period	Residential Trips ^a 17 Units	Retail Trips ^b 1,735 sf	Total Vehicle Trips	Total Public Transit/Other Trips ^c	Net Vehicle Trips
Daily	114	76	190	104	86
<i>Weekday Morning Peak Hour:</i>					
Entering	2	1	3	1	2
<u>Exiting</u>	<u>7</u>	<u>1</u>	<u>8</u>	<u>5</u>	<u>3</u>
Total	9	2	11	6	5
<i>Weekday Evening Peak Hour:</i>					
Entering	7	2	9	5	4
<u>Exiting</u>	<u>4</u>	<u>3</u>	<u>7</u>	<u>4</u>	<u>3</u>
Total	11	5	16	9	7

^aBased on ITE LUC 220, Apartment

^bBased on ITE 826, Specialty Retail Center

^cBased on journey to work data for Brookline obtained from the United States Census Bureau, ACS 2010-2014.

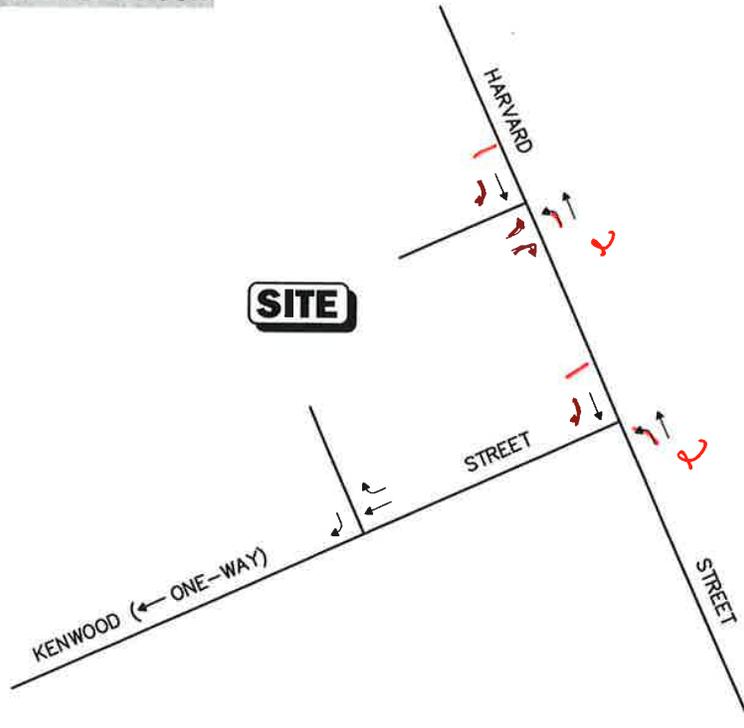
As shown in Table 4, the net vehicle trip estimate from this project is approximately 5 trips (2 entering and 3 exiting) during the weekday morning peak hour and 7 trips (4 entering and 3 exiting) during the weekday evening peak hour. These would be considered extremely low increases on any site. However, they are even smaller given the site is presently occupied and in operation as a restaurant. Restaurant site traffic consists of employees, customers, and delivery vehicles entering and exiting the site from the Harvard Street driveway.

This current restaurant traffic has been observed complicating operations at the intersection, due to vehicles entering and exiting the Harvard Street driveway while vehicles are attempting to exit from the

²Trip Generation Manual, Ninth Edition; Institute of Transportation Engineers; Washington, DC; 2012.

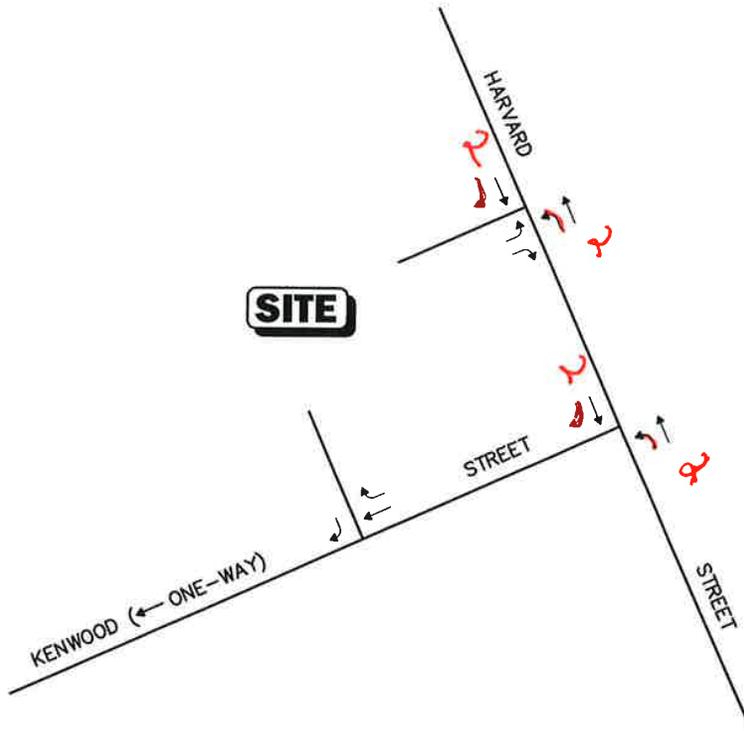


WEEKDAY MORNING PEAK HOUR



In 2
out 3
tot 5

WEEKDAY EVENING PEAK HOUR



In 4
out 3
tot 7



Not To Scale



Figure 3

**2020 Existing
Peak Hour Traffic Volumes**

455 Harvard Street

Background Development.

Equations 384 Harvard St

Institute of Transportation Engineers (ITE)
Trip Generation, 10th Edition
Land Use Code (LUC) 252 - Senior Adult Housing - Attached

Average Vehicle Trips Ends vs: Dwelling Units
Independent Variable (X): 62

AVERAGE WEEKDAY DAILY

$$T = 4.02 * (X) - 25.37$$

$$T = 4.02 * 62 - 25.37$$

$$T = 223.87$$

T = 224 vehicle trips

with 50% (112 vph) entering and 50% (112 vph) exiting.

WEEKDAY MORNING PEAK HOUR OF ADJACENT STREET TRAFFIC

$$T = 0.20 * (X) - 0.18$$

$$T = 0.20 * 62 - 0.18$$

$$T = 12.22$$

T = 12 vehicle trips

with 35% (4 vph) entering and 65% (8 vph) exiting.

WEEKDAY EVENING PEAK HOUR OF ADJACENT STREET TRAFFIC

$$T = 0.24 * (X) + 2.26$$

$$T = 0.24 * 62 + 2.26$$

$$T = 17.14$$

T = 17 vehicle trips

with 55% (9 vph) entering and 45% (8 vph) exiting.

SATURDAY DAILY

$$T = 3.97 * (X) - 60.09$$

$$T = 3.97 * 62 - 60.09$$

$$T = 186.05$$

T = 186 vehicle trips

with 50% (93 vph) entering and 50% (93 vph) exiting.

SATURDAY MIDDAY PEAK HOUR OF GENERATOR

$$T = 0.35 * (X) - 1.67$$

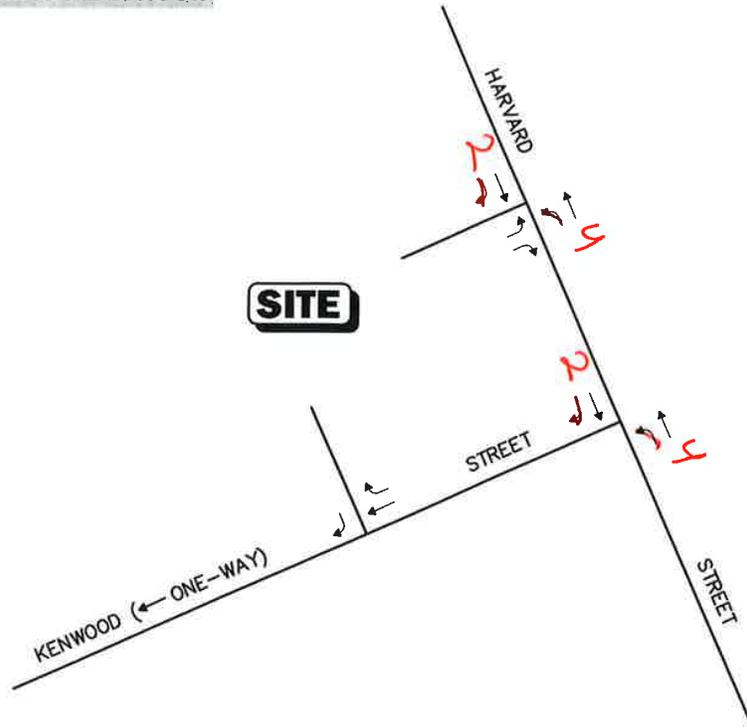
$$T = 0.35 * 62 - 1.67$$

$$T = 20.03$$

T = 20 vehicle trips

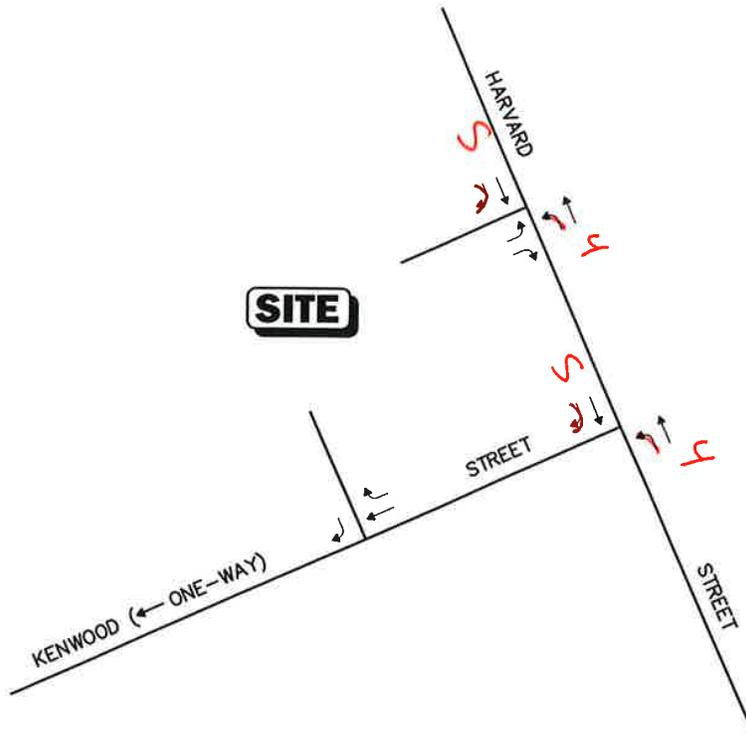
with 62% (12 vph) entering and 38% (8 vph) exiting.

WEEKDAY MORNING PEAK HOUR



In 4
out 8
tot 12

WEEKDAY EVENING PEAK HOUR



In 9
out 8
Tot 17



Not To Scale

VAI Vanasse & Associates inc

Figure 3

2020 Existing Peak Hour Traffic Volumes

384 Harvard Street

Back ground Development