

Ref: 8629

September 23, 2020

Ms. Mary F. Savage Dunham, AICP, CFM  
Director of Community Planning  
Town of Hingham  
210 Central Street  
Hingham, MA 02043

Re: Supplemental Traffic Engineering Peer Review  
Hingham Gas Redevelopment – 19 and 27 Whiting Street (Route 53)  
Hingham, Massachusetts

Dear Mary:

Vanasse & Associates, Inc. (VAI) has completed a review of the supplemental materials submitted on behalf of Merhej and Sons Realty, LLC (the “Applicant”) in support of the proposed redevelopment of the Hingham Gas site and an adjacent property located at 19 and 27 Whiting Street (Route 53), respectively, in Hingham, Massachusetts (hereafter referred to as the “Project”). This information was prepared in response to the comments that were raised in our June 11, 2020 review letter and consisted of the following materials:

1. *Site Development Plans*, Hingham Gas, #19 & 27 Whiting Street, Hingham, MA; CHA Consulting, Inc.; May 1, 2020, last revised September 10, 2020;
2. *Traffic Impact Study*, #19 & 27 Whiting Street Redevelopment, Hingham, MA; CHA Consulting, Inc.; September 2020; and
3. *Response to Traffic Peer Review*, Hingham Gas Redevelopment, #19 & 27 Whiting Street, Hingham, Massachusetts; CHA Consulting, Inc.; September 10, 2020.

Based on our review of supplemental information, we are generally satisfied that the Applicant has addressed the comments that were raised in our June 11, 2020 letter concerning the traffic and safety analysis; however, there remain comments pertaining to access and internal circulation within the Project site that need to be reviewed by the Applicant and addressed in order to demonstrate that access and circulation can be provided in a safe and efficient manner. A review of the truck turning analyses indicate a number of conflict points and both operational and circulation constraints that will require modifications to the Site Plans subject to further review by the Applicant’s engineers.

For reference, listed below are the comments that were raised in our June 11, 2020 letter followed by a summary of the response submitted on behalf of the Applicant, with additional comments indicated in **bolded** text for identification.

## **GENERAL COMMENTS**

Comment G1: *The Project will require the issuance of a State Highway Access Permit from MassDOT for access to Route 53 (Whiting Street) and, given the predicted increase in traffic that will be associated with the Project (>2,000 new vehicle trips), the Project will be subject to a filing under the Massachusetts Environmental Policy Act (MEPA). The Applicant should provide: i) a review of the MEPA Transportation thresholds as they relate to the Project and; ii) an update on any consultation that has occurred with the Massachusetts Department of Transportation (MassDOT).*

Response: The Applicant's engineer indicated that the Project is not expected to result in an increase in traffic or parking that would exceed a MEPA Transportation threshold and, as such, a filing under MEPA is not required for the Project. In addition, the Applicant has had preliminary discussions with MassDOT regarding the Project, but has not received any substantive comments.

**We concur with the opinion that the Project would not exceed a MEPA Transportation threshold as currently proposed. No further response required.**

## **APRIL 24, 2020 TRIP GENERATION ASSESSMENT**

Note: The data that was provided to support the responses that follow is included in the September 2020 Traffic Impact Study (the "September 2020 TIS").

Comment T1: *Traffic volume data and vehicle travel speed measurements should be provided for Whiting Street in the vicinity of the Project site. This information should consist of a 72-hour (Thursday through Saturday) automatic traffic recorder (ATR) count and the recorded traffic count data should be adjusted following the guidance issued by MassDOT for traffic counts conducted during the COVID-19 pandemic and the Governor's phased "Reopening Massachusetts" strategy.<sup>1</sup> Historic traffic count data is available along Whiting Street and Derby Street that can be used for this purpose.*

Response: A 72-hour ATR count was conducted on Whiting Street in the vicinity of the Project site on Thursday, August 6, 2020 through Saturday, August 8, 2020, inclusive, that included vehicle travel speed measurements. The traffic count data was appropriately adjusted to reflect the impact to traffic volumes and flow patterns resulting from the restrictions associated with the COVID-19 pandemic using traffic count data from 2019 that was obtained from a study conducted by the Boston Metropolitan Area Planning Organization for Washington Street (Route 53) and Pond Street (Route 228). In addition, a review of seasonal adjustment data developed by MassDOT for similar roadways was undertaken and it was determined that further adjustment of the raw traffic count data was not required.

**No further response required.**

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<sup>1</sup>Guidance on Traffic Count Data; MassDOT; revised April 2020.



Comment T2: *In accordance with MassDOT and MEPA standards, the Applicant may take credit for prior uses that occupy a site only if the prior uses were active within the past 3-years. The Applicant should provide documentation that the occupancy of the former uses is consistent with this standard as this will impact both the form of the MEPA filing and the State Highway Access Permit process.*

Response: The Applicant's engineer confirmed that the gas station has been in active use within the past 3-years and, therefore, a credit can be taken for the current use of the site.

**No further response required.**

Comment T3: *A motor vehicle crash analysis should be performed for the segment of Whiting Street that includes the Project site driveways following MassDOT standards and using crash data for the most recent five-year review period available (2013-2017, inclusive). A roadway segment crash rate should be calculated and compared to the MassDOT average crash rate for the functional classification of Whiting Street (urban minor arterial). In addition, a review of the MassDOT high crash location database should also be completed.*

Response: A motor vehicle crash analysis was performed for the segment of Whiting Street that includes the Project site driveways following MassDOT standards and using crash data obtained from MassDOT for the most recent reconciled five-year period available (2013-2017, inclusive). Based on this analysis, a total of 49 crashes reported to have occurred on the segment of Whiting Street between Accord Lane and Pond Street/Main Street, five (5) of which were identified to have occurred at or in the immediate vicinity of the driveways that serve 19 Whiting Street. The calculated crash rate for the roadway segment (number of reported motor vehicle crashes per million vehicle miles traveled) was found to be above the MassDOT average crash rate for similar roadway segments. The majority of the reported crashes occurred on dry pavement, during daylight and involved angle-type crashes that resulted in property damage only. A review of the MassDOT high crash location database did not indicate any high crash locations along Whiting Street between Derby Street and Pond Street/Main Street.

The identified crash trends are indicative of a commercial corridor on an arterial roadway that does not provide separate accommodations (or prohibitions) for left-turn movements and where multiple intersecting driveways are present. The Applicant has identified that the Project will result in a reduction in the number of driveways that will serve the site (19 and 27 Whiting Street) and that one of the Proposed driveways will be restricted to right-turn, exit only operation.

**The identified crash trends reinforce the need to implement access management strategies along Whiting Street in order to reduce the number of conflict points along the corridor. With specific regard to the Project, these strategies would entail: i) reducing the number of driveways; ii) reducing the width of driveways to the minimum necessary to support safe and efficient access; and iii) limiting or restricting turning movements. Each of these measures is being advanced as a part of the Project.**

**No further response required.**



Comment T4: *We concur with the ITE Land Use Codes (LUCs) that were used to estimate the volume of traffic attributable to the existing uses that occupy the Project site (Hingham Gas and a single-family home) and the resulting calculations. For the proposed use, we note the following with respect to the ITE LUCs that were used:*

- LUC 853, Convenience Market with Gasoline Pumps: i) primary business is the selling of convenience items and not the fueling of motor vehicles; ii) gross floor area of convenience store is at least 2,000 sf; and iii) the number of fueling positions is less than 10.*
- LUC 945, Gasoline/Service Station with Convenience Market: i) primary business is the fueling of motor vehicles; ii) gross floor area of convenience store is between 2,000 and 3,000 sf; and iii) the number of fueling positions is at least 10.*

*The Project will consist of a four (4) pump (8 vfps) gasoline fueling facility and a 2,531± sf convenience store with 1,000 sf of storage space and 1,000± sf of lower level site maintenance equipment storage. The ITE definition of “gross floor area” for the convenience store would include the 1,000 sf of storage space, but would exclude the 1,000 sf of site maintenance equipment storage. As such, the convenience store would comprise 3,531± sf.<sup>2</sup> As such, LUC 853, Convenience Market with Gasoline Pumps, would appear to be the appropriate ITE LUC for the Project and should be confirmed by the Applicant’s engineer with respect to the Applicant’s expectation as to the primary business of the Project (i.e., fuel sales or sales at the convenience store).*

Response: The Applicant’s engineer provided revised trip-generation calculations for the Project using ITE LUC 853, *Convenience Market with Gasoline Pumps*, and using the independent variable of number of vehicle fueling positions (vfps) (8) vs. the gross floor area of the convenience store (acknowledged to be 3,531 sf) which results in higher overall trip estimates for the Project. Appropriate adjustments were applied to the base trip-generation calculations to account for “pass-by” trips, or vehicles that are traveling along Whiting Street for other purposes that will patronize the Project and then continue to their primary destination. Pass-by trips are not new trips to Whiting Street, but do represent new turning movements at the Project site driveways. The table below summarizes the trip-generation calculations for the Project.

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<sup>2</sup>ITE defines the gross floor area as “the sum of the area of each floor level of a building (expressed in square feet), including cellars, basements, mezzanines, penthouses, corridors, lobbies, stores, and offices, that are within the principal outside faces of exterior walls, not including architectural setbacks or projections. Included are all areas that have floor surfaces with clear standing head room (6 ft. 6 in. minimum) regardless of their use.”



**PROPOSED CONVENIENCE STORE AND FUELING FACILITY  
 TRIP GENERATION SUMMARY**

Time Period/Direction	Vehicle Trips				
	(A) Gross Trips <sup>a</sup>	(B) Existing Trips <sup>b</sup>	(C = A - B) Net Trips	(D) Pass-By Trips	(E = C - D) New Trips
<i>Average Weekday:</i>					
Enter	1,290	693	597	358	239
Exit	<u>1,290</u>	<u>692</u>	<u>598</u>	<u>359</u>	<u>239</u>
Total	2,580	1,385	1,195	717	478
<i>Weekday Evening Peak-Hour:</i>					
Enter	83	41	42	25	17
Exit	<u>83</u>	<u>42</u>	<u>41</u>	<u>25</u>	<u>16</u>
Total	166	83	83	50	33
<i>Saturday Midday Peak-Hour:</i>					
Enter	92	57	35	21	14
Exit	<u>92</u>	<u>56</u>	<u>36</u>	<u>22</u>	<u>14</u>
Total	184	113	71	41	28

<sup>a</sup>Based on ITE LUC 953, *Convenience Market with Gasoline Pumps* (8 vfps).

<sup>b</sup>Based on ITE LUC 210, *Single-Family Detached Housing* (one (1) dwelling unit), and 944, *Gasoline/Service Station* (8 vfps).

Trips associated with the Project were assigned to Whiting Street based on existing traffic patterns and to the Project site driveways based on the origin and type of trip (i.e., primary vs. pass-by trips).

**We are in agreement with methodology that was used to estimate the volume of traffic associated with both the existing and proposed uses, the net increase in traffic that the Project represents and the resulting increase in new trips to Whiting Street. We are also in general agreement with the trip distribution pattern and the assignment of trips to the Project site driveways.**

**No further response required.**

Comment T5: *Trip-generation calculations should be provided for the Saturday midday peak-hour.*

Response: Saturday midday trip data was not available for the ITE LUC that was used to establish the traffic characteristics of the Project, so the Applicant assumed that trips during the Saturday peak-hour would be similar to those during the weekday evening peak-hour.

**While there are accepted methodologies to estimate peak-hour trips using ITE data for similar land uses when specific trip information is not available, we concur that the trip estimates for the Project would be similar to those during the weekday evening peak-hour.**

**No further response required.**

Comment T6: *A traffic operations analysis should be performed for the Project site driveway intersections with Whiting Street under 2027 Build (with the Project) conditions. The future baseline traffic volumes associated with this analysis should include background traffic growth, specific development*



*projects by others as identified by the towns of Hingham and Norwell, and future roadway improvement projects that may be undertaken by MassDOT. The analysis results should be summarized in a table and report the appropriate performance indicators for all movements, including demand, delay, level-of-service and vehicle queue lengths.*

Response: A traffic operations analysis was performed for the Project site driveway intersections with Whiting Street under 2027 Build (with the Project) conditions. The 2027 Build condition traffic volumes were developed by applying a 1.0 percent per year compounded annual background traffic growth rate to the 2020 Existing traffic volumes and then adding the traffic associated with the Project.

The traffic operations analysis indicates that exiting movements from the center and east driveways will operate at a level-of-service (LOS) D during the weekday morning peak-hour and at LOS E or F during the weekday evening peak-hour due to the large volume of conflicting traffic on Whiting Street, which is similar to operating conditions at other unsignalized driveways and side streets along Whiting Street. The resulting residual vehicle queues were shown to range from one (1) to two (2) vehicles, and can be contained within the Project site. The Site Plan reflects the installation of “Do Not Block” pavement markings for the center Project site driveway to reduce the potential for exiting vehicle queues to block access to the parking spaces along the front of the convenience store building. All movements along Whiting Street approaching the driveway were shown to operate at LOS B or better with minimal (less than one (1) vehicle) vehicle queuing predicted.

**No further response required.**

Comment T7: *A sight distance analysis (intersection and stopping sight distance) should be completed for the Project site driveway intersections, including the shared access driveway, following American Association of State Highway and Transportation Officials (AASHTO)<sup>3</sup> standards and using the measured 85<sup>th</sup> percentile vehicle travel speeds along Whiting Street or the posted speed limit, whichever is higher. The intersection sight distance for left-turn movements exiting the Project site and the shared access driveway should be adjusted (increased) to reflect the need to cross additional travel lanes on Whiting Street (i.e., the gap time in the calculation should be increased accordingly).*

Response: A sight distance analysis was performed for the Project site driveway intersections with Whiting Street following the appropriate standards and using the measured 85<sup>th</sup> percentile vehicle travel speeds along Whiting Street (38 mph eastbound and 40 mph westbound). Comparing the measured sight lines to the recommended minimum distances for safe operation, the Applicant’s engineer concluded that the available lines of sight exceed the recommended values for safe operation of the driveways noting objects that are located within the sight triangle areas, but that do not pose a continuous obstruction to motorist visibility.

**We are in agreement with the methodology that was used to complete the sight distance analysis, the resulting values and the conclusion that the available sight lines exceed the recommended minimum sight distance for safe operation of the driveways. No further response required.**

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<sup>3</sup>A Policy on Geometric Design of Highway and Streets, 6th Edition; American Association of State Highway and Transportation Officials (AASHTO); Washington D.C.; 2011.



Comment T8: *Recommendations should be provided with respect to: on-site circulation; regulatory signs and pavement markings; pedestrian and bicycle accommodations; traffic management during deliveries, with particular emphasis on fuel deliveries; and the management of conflicting movements at the connection to the shared access driveway.*

Response: Recommendations were provided as a part of the September 2020 TIS with regard to signs, pavement markings and other traffic control devices to regulate the movement of vehicles within the Project site, and are reflected on the Site Plans. In addition, a description of access and maneuvering for delivery vehicles was also provided.

**We are in agreement with the recommendations that were provided in the September 2020 TIS and have provided additional recommendations as a part of our review of the revised Site Plans (discussion follows). No further response required.**

### **MAY1, 2020 SITE DEVELOPMENT PLANS**

Comment S1: *A truck turning analysis should be performed using the AutoTurn® software package for the following design vehicles: Hingham Fire Department design vehicle, a single-unit truck (SU-30 design vehicle) and a fuel delivery truck (WB-62 design vehicle or similar). The turning analysis should demonstrate that the design vehicles can access the appropriate areas within the Project site and circulate in an unimpeded manner without intrusion into parking spaces or vehicle fueling positions. The fire truck turning analysis should confirm that all elements of the design vehicle are retained within the traveled-way and do not overhang the curbline or cross into parking spaces.*

Response: Truck turning analyses were provided for the requested design vehicles.

**The turning analyses for the Hingham Fire Department design vehicle and the single-unit truck indicate that these vehicles are not able to access and circulate within the site in an unimpeded manner. The fire truck design vehicle is not able to exit the site by way of the west Project site driveway and a significant incursion beyond the curbline is shown. The single-unit truck is shown crossing the curbline entering the center Project site and also crosses the northern curbline within the Project site when maneuvering to back into the loading area. We believe that the incursions associated with the single-unit truck can be addressed by adjusting the turning analysis; however, the Site Plan will need to be revised to accommodate fire truck access.**

**The turning analysis for the fuel delivery truck indicates that the truck will block access to the fueling facility. In addition, given the need for the truck to back into position to off-load fuel, fuel deliveries will need to be scheduled to occur while the site is closed to customers or during overnight hours, such as between 9 PM and 6 AM, or similar. Further, the fueling facility will need to be closed prior to the arrival of the fuel truck.**

**It is suggested that consideration be given to relocating the driveway connection to the shared access driveway to the north of its current location in order to reduce the conflicts and circulation constraints within the Project site that have been identified by the truck turning analysis (discussion follows).**



Comment S2: *The center Project site driveway should be reduced in width to no more than 30 feet (standard MassDOT commercial driveway opening) and should include centerline pavement markings (double-yellow line) to separate entering and exiting traffic, a STOP-sign and a marked STOP-line.*

Response: The center Project site driveway has been reduced in width to 29.6-feet and the requested signs and pavement markings have been added.

**No further response required.**

Comment S3: *Consideration should be given to closing the shared access driveway to the Project site while retaining the access to Whiting Street that is afforded by the easement. If this access to the Project site cannot be closed, we recommended that driveway connection to Whiting Street be reduced in width to 30 feet and the access to the Project site from the easement be restricted to a one-way entrance that is no more than 20 feet in width and located as far north as possible from Whiting Street.*

Response: The connection between the Project site and the shared access driveway has been reduced in width to 30-feet and curbing has been added to provide improved definition of the driveway connection. These changes have increased the separation between the driveway and Whiting Street and will serve to reduce travel speeds for vehicles entering the driveway from Whiting Street.

**Retaining the two-way operation of the driveway is necessary to accommodate access by the fuel delivery truck and to allow for vehicles to move between the Project site and the abutting properties to the east without recirculating onto Whiting Street. That being said, relocating the driveway connection to the north to align with the loading zone may serve to improve access and circulation for the fire truck, single-unit truck and fuel delivery vehicle, eliminating or reducing the impacts and incursions that were identified by the truck turning analysis. In addition, this would also eliminate the conflict point proximate to Whiting Street. We would recommend that the relocation of the driveway connection to the shared access driveway be explored by the Applicants engineer.**

**A STOP-sign, marked STOP-line and a double-yellow centerline should be added to the driveway approaching the shared access driveway. These features should be added to the final Site Plan.**

Comment S4: *Consideration should be given to restricting left-turn movements from the exit only Project site driveway.*

Response: Left-turn movements have been restricted from the exit-only Project site driveway.

**In addition to the “Right Turn Only Sign”, a right-turn arrow with “ONLY” pavement markings should be added to the driveway, and the “STOP” pavement making removed. These changes should be reflected on the final Site Plan.**



Comment S5: *The sight triangle areas for the Project site driveway intersections should be added and based on the sight distance analysis (see T7).*

Response: **A sight distance plan was provided; however, the sight triangles for the driveways were not shown and should be added to the final Site Plan.**

Comment S6: *A sidewalk should be provided along the Project site frontage on Whiting Street with a connecting sidewalk between the new sidewalk and the proposed building. Americans with Disabilities Act (ADA) compliant wheelchair ramps should be provided for crossing the Project site driveways and at pedestrian crossings within the Project site, which should along include marked crosswalks.*

Response: The Applicant has indicated that there are currently no sidewalks along the north side of Whiting Street to which a sidewalk along the Project site frontage would connect. Further, it was noted that any constructed sidewalk may not align with future roadway improvements that may be advanced by MassDOT.

**We agree with the Applicant's engineer that there would be limited utility to constructing an isolated sidewalk segment at this time. No further response required.**

Comment S7: *A bicycle rack should be provided at an appropriate location within the Project site that is proximate to the customer entrance of the proposed building.*

Response: A bicycle rack has been added. **No further response required.**

## **PARKING**

*Comment: We do not support considering the storage space as warehouse space for the purpose of establishing the traffic characteristics or parking demands of the Project. As discussed previously, the gross floor area of the convenience store should include the storage space that is attached to and directly accessible from the retail space, which would result in 3,531± sf of retail space. The 1,000± sf of equipment storage/mechanical space this is accessed from a separate door on a sublevel of the building should not be included, as the space in and of itself does not result in additional traffic or parking demands. Applying the parking requirements of the Zoning By-Law for a "Retail and Service Business" to the Project (3,531± sf of retail space) would result in a parking requirement of 18 parking spaces, which is consistent with the average peak parking demand for the Project using the ITE parking demand data for a convenience market (19 parking spaces).*

*The above being said, we would support a reduction in the number of parking spaces that are required for the Project under the Zoning By-Law from 18 spaces to 16 spaces, as it is expected that a portion of the customers that purchase fuel will also patronize the convenience store and the associated vehicle will occupy one of the eight vehicle fueling positions.*

Response: The Applicant's engineer indicated that the proposed building has been reduced from 3,531± sf to 3,031± sf, including 2,531± sf of retail space and 1,000± sf of storage space, and that the required number of parking spaces pursuant to the Zoning By-Law is 15 parking spaces



(5.0 parking spaces per 1,000 sf for the retail component and 1.0 parking spaces per 1,000 sf for the storage component), which is consistent with the number of parking spaces that are proposed.

**We are in agreement with the revised parking calculations for the Project and the conclusion that the parking supply meets the requirements of the Zoning By-Law for the proposed uses. No further response required.**

This concludes our review of the materials that have been submitted to date in support of the Project. If you should have any questions regarding our review, please feel free to contact me..

Sincerely,

VANASSE & ASSOCIATES, INC.



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

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

JSD/jsd

