

May 27, 2025

Ms. Jacki Byerley  
Town Planner  
Town of Andover, MA  
26 Bartlet Street  
Andover, MA 01810

RE: Response to Comments – Traffic Peer Review  
140 Haverhill Street Development  
Fuss & O'Neill Reference No. 20241158.A11

Dear Ms. Byerley:

Fuss & O'Neill/Bayside Engineering is in receipt of Apex Companies, LLC (Apex) Review of Traffic Impact and Access Study for the proposed development at 140 Haverhill Street, Andover, MA Memorandum dated May 6, 2025. The purpose of this letter is to respond to these comments. Fuss & O'Neill, working with Ranger Engineering and the Gardner School, has developed responses to the APEX comments (noted below in bold print).

### Existing Traffic Conditions

1. Apex notes discrepancies on the jurisdictions and classifications of the study roadways compared to the Massachusetts Department of Transportation (MassDOT) Roadway Inventory database. First, the TIAS states that Haverhill Street is owned by MassDOT. However, the MassDOT database lists the roadway as being owned by the Town. Second, the TIAS states that High Street is a Rural Major Collector, whereas the MassDOT database states that it is an Urban Minor Arterial. Apex requests confirmation on the jurisdiction and classification of both roadways.

#### Response:

**Haverhill Street is a state numbered, locally maintained roadway. High Street, based on MassDOT data can be classified as an Urban Minor Arterial or a Rural Major Collector. The description for the roads has been updated in the Updated Traffic Impact and Access Study (UTIAS).**

2. The TIAS states that the traffic signal at the Haverhill Street at High Street study intersection has pedestrian activation. While Apex has not performed a recent field visit to verify conditions per the scope of our review, we referenced available Google Street view imagery from September 2023 and did not find any pedestrian signal equipment at the intersection. Apex requests confirmation on whether the traffic signal at this intersection includes pedestrian accommodations.

**Response:**

**There is no pedestrian actuation at the intersection. A crosswalk exists across the High Street northbound approach to the intersection. The description for the intersection is included in the UTIAS.**

3. The High Street and Existing Site Driveway study intersection description appears to be the same description provided for the Haverhill Street and Existing Site Driveway study intersection. Apex requests an updated description for the High Street and Existing Site Driveway study intersection.

**Response:**

**The updated description for the High Street and Site Driveway intersection is included in the UTIAS.**

4. A seasonal adjustment factor of seven (7) percent was chosen based on a review of data provided in the 2023 Weekday Seasonal Factors table provided by MassDOT and data from a continuous MassDOT count station (Station No. 502) on Turnpike Street (Route 114) near Merrimack College. While we take no exception to the MassDOT count station being reviewed as a secondary reference, we note that MassDOT's Weekday Seasonal Factors Report is their preferred source for seasonal adjustment. Based on this report, Haverhill Street, which is an Urban Principal Arterial under group 'U3', should have an adjustment factor of two (2) percent for the month of February, and High Street, which is an Urban Minor Arterial under group 'U4', requires no adjustment for the month of February, both of which are less than the applied seven (7) percent. Providing greater adjustments to existing volumes can underestimate the impact of the trips generated by the proposed project over the background traffic. While this item alone may not have a significant impact on the overall outcome of the study, cumulative alterations identified within this document may have an impact. As such, Apex recommends the seasonal adjustment factors be reviewed and updated as necessary for both Haverhill Street and High Street, along with the other items identified in this document to determine the overall impacts.

**Response:**

**Fuss & O'Neill has reviewed APEX's assessment of the seasonal adjustment factors and concur. The proper changes have been made in the UTIAS.**

5. Apex performed a high-level review of the existing traffic volumes against the counts provided in the Appendix. It appears that volumes at the two site driveways have been adjusted based on the volumes at the intersection of Haverhill Street and High Street. Apex requests verification.

**Response:**

**A review of the traffic count data shows that during the weekday morning peak hour, two of the three intersections peaked at 7:30 to 8:30 AM and the third (High Street and the site driveway)**

**peaked at 8:00 to 9:00 AM. With the adjustment to the seasonal factors, the 7:30 to 8:30 AM hour was used in the UTIAS for the weekday morning peak hour.**

**Similarly, during the weekday evening peak hour, two of the three intersections peaked at 4:45 to 5:45 PM and the third (High Street and the site driveway) peaked at 4:30 to 5:30 PM. With the adjustment to the seasonal factors, the 4:45 to 5:45 PM hour was used in the UTIAS for the weekday evening peak hour.**

6. Apex notes discrepancies in the existing traffic volumes presented in Figure 3 of the TIAS. After performing backup calculations to increase the traffic counts from the Appendix by the seasonal adjustment factor of seven (7) percent, we found discrepancies greater than 15 vehicles. Additionally, as noted above, we recommend revisiting the seasonal adjustment factors, which would impact the traffic volumes. While the volume discrepancies alone may not have a significant impact on the overall outcome of the study, cumulative alterations identified within this document may have an impact. As such, Apex recommends a review of the traffic volumes and an updated analysis if necessary.

**Response:**

**The volumes at the study area intersections from Comment No. 5 above were used as the new baseline existing volumes. The discrepancies from the raw count data to the baseline existing network volumes was associated with the different peak hours for the traffic volume data.**

7. The TIAS states that the motor vehicle crash data for the study area intersections were obtained from the Andover Police Department for 2015 through 2024. However, the information provided in the Appendix appears to show that the MassDOT crash database was utilized for 2015-2021 crashes, and the Town's Police Department reports were utilized for 2022-2024 crashes. While Apex takes no exception to the crash information provided, we note that for the three most recent years of data (typical of a crash analysis), which also coincides with the data available directly from the Police reports (typically more exhaustive than the MassDOT database alone), the crash rate at the intersection of Haverhill Street at High Street appears to be slightly higher than the Statewide and District 4 averages. The higher crash rate indicates there may be some safety concerns at the intersection that could possibly be mitigated with minor improvements.

**Response:**

**The MassDOT crash database was utilized for 2015-2021 crashes, and the Town's Police Department reports were utilized for 2022-2024 crashes. For the three most recent years of data, which MassDOT requires at a minimum for a typical crash analysis, the crash rate at the intersection of Haverhill Street and High Street would be slightly higher than the Statewide and District 4 averages. However, looking at the reported crash data from 2015 to 2024 as a whole, there were no more than six (6) crashes a year (average of 3.9 crashes per year), except for 2022 when ten (10) crashes were reported.**

Looking at the last three (3) years alone yields a higher crash rate. A review of the crashes for 2022 through 2024 is summarized in Table 1.

**TABLE 1  
 MOTOR VEHICLE CRASH DATA SUMMARY<sup>a</sup>**

Scenario	Location		
	Haverhill Street and High Street	Haverhill Street and Site Driveway	High Street and Site Driveway
<i>Year<sup>b</sup>:</i>			
2022	10	0	0
2023	5	0	0
<u>2024</u>	<u>3</u>	<u>0</u>	<u>0</u>
Total	18	0	0
Average <sup>b</sup>	5.1	0.0	0.0
Crash Rate <sup>c</sup>	0.78	0.00	0.00
Significant <sup>d</sup>	Yes	No	No
<i>Type:</i>			
Angle	9	0	0
Rear-End	7	0	0
Head-On	1	0	0
Sideswipe	0	0	0
Pedestrian	0	0	0
Bicycle	0	0	0
<u>Single Vehicle Crash</u>	<u>1</u>	<u>0</u>	<u>0</u>
Total	18	0	0
<i>Time of Day:</i>			
Morning (7:00 to 9:00 AM)	4	0	0
Evening (4:00 to 6:00 PM)	3	0	0
<u>Remainder of Day</u>	<u>11</u>	<u>0</u>	<u>0</u>
Total	18	0	0
<i>Pavement Conditions:</i>			
Dry	13	0	0
Wet	4	0	0
<u>Snow/Ice/Slush</u>	<u>1</u>	<u>0</u>	<u>0</u>
Total	18	0	0
<i>Severity:</i>			
Property Damage Only	10	0	0
Personal Injury	6	0	0
Fatal Accident	0	0	0
<u>Unknown</u>	<u>2</u>	<u>0</u>	<u>0</u>
Total	18	0	0

<sup>a</sup>Source: MassDOT Crash Portal.

<sup>b</sup>Average crashes over analysis period.

<sup>c</sup>Crash rate per million entering vehicles (mev).

<sup>d</sup>District 4 signalized intersections are significant if rate >0.73 crashes per million vehicles and unsignalized intersections are significant if rate >0.57 crashes per million vehicles.

**Using the three (3) years of data from 2022 through 2024 indicates the crash rate would be slightly higher than the Statewide and District 4 averages. Most of the crashes were either angle (9 crashes) or rearend (7 crashes).**

**At signalized intersections, angle crashes often result from failure to yield the right-of-way, including running red lights, or misinterpreting right-of-way rules. Rear-end collisions at signalized intersections are often caused by a combination of factors, including inattention, tailgating, and sudden stops. Both could be indirectly related to the clearance interval afforded at the intersection.**

**No-Build and Build Traffic Conditions**

- 8. The TIAS states that background information is provided on the traffic generation of the nearby project at 7 Tantalum Road. However, no information is provided in the Appendix. Apex requests this information to verify the volumes that were added from this project to the no-build condition.

**Response:**

**The 7 Tantalum Road traffic flow networks are included in the UTIAS appendix.**

- 9. No backups are provided on how the trip distribution shown in Table 5 and Figure 5 of the TIA was calculated. The TIAS states that the existing driveway distributions were used to develop the expected trip generation patterns for the proposed facilities. Apex requests backups to verify the calculated trip distribution.

**Response:**

**The existing flows into and out of the study area were utilized. The worksheets are included in the UTIAS appendix.**

**Analysis**

- 10. The Synchro capacity analysis reports appear to show some of the peak hour factors (PHF) being changed for the morning and evening build conditions, whereas the majority of these values remain the same as existing and no-build conditions. It is assumed that the adjusted PHF values may have been applied to movements that have minimal traffic in the absence of site-generated traffic with anomalously low PHF. Typical methodology may follow MassDOT requirements to allow for a direct comparison of the future conditions, which is to provide a consistent PHF of 0.92 for no-build and build conditions. Apex recommends updating all PHF values to 0.92 for the no-build and build conditions. While this item alone may not have a significant impact on the overall outcome of the study, cumulative alterations identified within this document may have an impact.

**Response:**

**The updated capacity analyses in the UTIAS provides a consistent PHF of 0.92 for No-Build and Build conditions.**

11. Table 9 of the TIAS lists the Haverhill Street eastbound approach as having an undesirable level of service (LOS) E under the no-build conditions. Apex notes that due to the volume-to-capacity (v/c) ratio of this movement exceeding 1.0, this movement should be listed as operating under an unacceptable LOS F.

**Response:**

**The associated level of service designation for movements with a v/c ratio greater than 1.0 are designated as LOS F in the UTIAS. It is noted that this occurs in the No-Build condition (without the project).**

12. The TIAS states that at the intersection of Haverhill Street and High Street, the Project has minimal impact on the intersection with small increases in the volume to capacity (v/c) ratio and projected delays compared to future No-Build conditions. However, based on the analysis as presented, several lane groups degrade in level of service as a result of the Project, and some lane groups show noteworthy increases in delay of up to 19 seconds; additionally, the overall operation of the intersection is shown to degrade from an acceptable LOS D to an undesirable LOS E with approximately 11 seconds of increase in delay during the evening peak hour. We note that with the recommended revisions identified herein, the traffic operations and impacts due to the Project may differ.

**Response: As a result of changes in the seasonal adjustment factors and the restriction of left turns out of the Haverhill Street driveway, the UTIAS analyses show small increases in overall delay during the peak hours. During the weekday morning peak hour, there is a 1.6 second increase in overall delay and during the weekday evening peak hour, there is a 7.9 second increase in overall delay. Overall, the intersection will be at LOS D or better during the peak hours.**

**The one approach that shows the largest delay is the Haverhill Street eastbound shared left, through and right turn movement approach. However, it should be noted that as v/c ratios exceed one, the delay algorithm is a parabolic function. Hence, as the v/c ratio exceeds 1.0, the calculated delay is significantly higher and may not be representative of the actual delay. Further, for this approach, it has been observed that through movements and right turn movements have the ability to go around a vehicle waiting to make a left turn, and do not necessarily experience the long delays the SYNCHRO model projects.**

13. Apex notes that the background information on the parking analysis with empirical data at the Gardner School in Northbrook, Illinois, while comparable in terms of the size of the development, reflects information in a different geographic region prior to the COVID-19 pandemic. Understanding that the Gardner School has multiple locations in Massachusetts, Apex recommends considering collecting

updated and local empirical data to validate findings of the study at the Northbrook, Illinois location and confirm appropriateness of such data to be used for the proposed Project.

**Response:**

**The Gardner School operates under a standardized national model as well as local childcare regulations which govern enrollment structure, staffing ratios, hours of operation, and parent drop-off/pick-up protocols. These consistencies ensure that parking demand is primarily a function of the facility's program size, operational model, and the target user group, working families with young children. Parking demand observed at our Northbrook location is reflective of the same user-driven behaviors we anticipate at the proposed Massachusetts facility.**

**Regarding the timing of the study, while it was conducted prior to the COVID-19 pandemic, this in fact supports a conservative approach. The pre-pandemic conditions reflect a worst-case scenario in terms of parking demand, as parent work schedules were more consistently office-based, resulting in higher volumes of simultaneous drop-offs and pick-ups. During the height of the pandemic, The Gardner School experienced temporary operational changes, including modified hours and staggered scheduling. Since 2021, their operations have fully returned to the original, in-person model across all locations and market trends are now reinforcing a return to office-based work. A growing number of employers have adopted hybrid or full-time in-office policies, and attendance at our schools has seen a move toward to pre-pandemic levels — further validating that the baseline conditions reflected in the Northbrook data remain relevant to today's context.**

**All our current Massachusetts facilities have been open & operating for six months or less and are still in the early stages of ramping up enrollment. While we recognize the value of localized data collection, attempting to collect parking demand data during this early operational phase would result in artificially low demand observations that do not reflect the long-term conditions anticipated for the proposed project. In contrast, the data collected at The Gardner School of Northbrook, Illinois reflects a stabilized and established facility operating under the same standardized model, serving the same target user group, and offering a nearly identical program size.**

**Table 2 summarizes existing parking space counts for 13 recently opened and operating Gardner School locations across multiple states. Based on the absence of any ongoing operational challenges related to parking at these schools, The Gardner School is confident that the proposed number of parking spaces for the new facility will adequately support its needs.**

**TABLE 2**  
**Existing Garner School Locations Parking Summary**

School No.	Existing Facility Location	Total Enrollment Capacity	Number of Parking Spaces
1	Denver, CO (Central Park)	204	33
2	Lincolnshire, IL	206	42
3	Northbrook, IL	206	48
4	Oakbrook Terrace, IL	206	49
5	Schaumburg, IL	206	51
6	Herndon, VA	206	42
7	Greenwood Village CO	204	44
8	Eagan, MN	206	48
9	Edina, MN	216	42
10	Minnetonka, MN	196	40
11	Dedham, MA	195	50
12	Braintree, MA	237	50
13	Weymouth, MA	195	55
Average No. of Spaces:			46
Median No. of Spaces			48

**Recommendations and Conclusions**

14. The TIAS recommends providing sight distance triangles at the site driveways to identify areas where existing obstructions should be removed and vegetation maintained at a low height. Apex concurs with this recommendation and requests sight distances for review.

**Response:**

**Sight distance triangles have been added to the site plans.**

15. Apex understands that the Project proponent is committed to monitoring the intersection of Haverhill Street and High Street after substantial occupancy of the Project and considering mitigation if necessary. However, given the degradation in traffic operations already apparent in the presented analysis, we recommend implementing traffic signal retiming as part of the Project mitigation.

The traffic signal retiming included in the TIAS shows minimal timing changes compared to the existing/no-build conditions. During the morning peak hour, the signal retiming results appear to show relatively similar operations to the no-build conditions and minor improvements compared to the unmitigated build conditions. However, during the evening peak hour, the signal retiming results still show degraded operations compared to the no-build conditions, particularly along the High Street approaches. Apex recommends a further evaluation of the optimal signal timings to improve upon these operations. Ultimately, if the Town and the Project proponent decide not to proceed with mitigation upfront, Apex recommends developing a formalized transportation monitoring program, outlining details, including but not limited to, timeframe and frequency of data collection as well as measurable thresholds with a commitment from the Project proponent to reevaluate mitigation measures should the thresholds be exceeded.

**Response:**

**The Applicant will provide a monitoring program, outlining details such as timeframe, frequency of data collection along with a reevaluation of operations at the Haverhill and High Street intersection. In addition, the Applicant offers to contribute \$10,000 to a Town transportation fund, or similar, for any future signal improvements the Town feels are necessary.**

- 16. Crash history at the intersection of Haverhill Street and High Street shows that the predominant crash types consist of angle and rear-ends, which both may be susceptible to improvement by modifying signal timing clearances. As such, Apex recommends reviewing signal timing clearances and propose modifications as necessary along with the retiming evaluations outlined above.

**Response:**

**As indicated in the response to Comment No. 15, the Applicant offers to contribute \$10,000 to a Town transportation fund, or similar, for any future signal improvements the Town feels are necessary.**

- 17. Apex recommends that the Transportation Demand Management (TDM) plan be formalized and mutually agreed upon between the Applicant and the Town.

**Response:**

**As a condition of approval, a Transportation Demand Management (TDM) plan will be formalized and mutually agreed upon between the Applicant and the Town.**

- 18. The TDM states a “welcome packet” will be provided to new employees detailing available public transportation services, bicycle and walking alternatives, and other commuter options. However, it appears that the pedestrian and bicycle accommodations in the vicinity of the Project site do not provide an adequate network for access to the site. Apex recommends a further evaluation of the feasibility of bicycle and walking alternatives and considering improvements to leverage these alternatives in line with the TDM.

**Response:**

**The applicant will provide bike racks on the site. A sidewalk to Haverhill Street had been considered but cannot be provided as there is a strip of land between land controlled by the Applicant and Haverhill Street that is controlled by a third party.**

**Site Plans**

19. The site plans do not include or indicate many site features, including edge of pavement treatment and signs. Apex requests the plan be updated to include this pertinent information to allow for a thorough review of the site.

**Response:**

**The existing conditions plans show the curbing with double lines. The curbing is presently bituminous and unless it is being removed for the construction it will remain. New curbing around the buildings where there are sidewalks will be precast concrete or if the owner chooses, he could use vertical granite. Curbing in outer areas of the parking lots will be bituminous cape cod berm. Additional labels can be added to further define the locations.**

20. The site plans do not show and/or call out the pedestrian curb ramp (PCR) locations. Apex requests indicating the PCR locations and calling out the applicable detail at each location.

**Response:**

**The locations will be identified.**

21. All pedestrian curb ramp (PCR) details included in the plans should be updated to address the following:

**Response:**

- A detectable warning panel detail should be provided as referenced on the PCR details.
  - **A detail will be added.**
- The “level landing” area must be sloped at 1.5% or less in all directions.
  - **The notes in the curb ramp details state this requirement.**
- Guidance on transition lengths should be added to the details.
  - **The transition length is noted in the details.**
- It is recommended that all PCR openings be a minimum of five (5) feet wide.
  - **The details can be changed to 5’.**

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22. The precast concrete curb detail indicates a typical curb reveal of seven (7) inches. A curb reveal of six (6) inches is more typical. Apex requests explanation on why seven inches of curb reveal is required.

**Response:**

**The detail will be changed to 6”.**

23. This site plan does not include a sign summary. We recommend a sign summary be added to the plans to show the proposed traffic sign sizes and sign layouts.

**Response:**

**The only signs will be STOP signs. A detail will be provided.**

24. Apex recommends adding stop lines and stop signs at both driveway access locations exiting the site.

**Response:**

**STOP signs and lines will be added.**

25. The site plan states that 150 parking spaces are provided at the site. However, we found only 147 parking spaces shown on the plan. Apex requests confirmation of the number of parking spaces.

**Response:**

**The number of parking spaces is now 149. There was a mislabel by two (2) spaces in one area of the parking lot for the medical building, and one (1) was lost when the two (2) handicap spaces were added to the school building. The handicap spaces at the medical building have been reconfigured to gain two (2) spaces.**

26. As indicated in the TIAS and shown on the site plans, Apex notes that the required number of parking spaces according to the Town by-laws is not met in the proposed site. We recommend coordination with the Town on any waiver that may be required for deficiencies in the number of proposed parking spaces.

**Response:**

**The reduced number of parking spaces has been approved by the Zoning Board. The school does not need the number of spaces listed in the bylaw.**

27. The dimension of proposed accessible parking spaces do not meet the minimum requirements of Town zoning by-laws. However, we note that the dimensions comply with the Americans with Disabilities Act (ADA) standards.

**Response:**

**We disagree with this comment. The town bylaw states that the space should be 12' in width. The spaces shown are 9' in width with a 9' unobstructed access adjacent to the spaces, which is effectively larger than the town requirement.**

28. The accessible parking space detail does not show a curb cut at the access aisle. Apex requests the detail be modified to indicate this curb cut.

**Response:**

**The curb cuts can be shown on the detail.**

29. The crosswalk pavement markings detail shows the width of the crosswalk to be six (6) feet wide. We recommend updating the detail to show at least eight (8) feet of width for improved visibility.

**Response:**

**The lines can be lengthened to 8".**

30. The pavement detail indicated on Sheet CS0002 of the site plans is inconsistent with the detail on sheet CS6001. Apex requests this inconsistency be reconciled.

**Response:**

**The note on Sheet CS 0002 will be revised.**

31. The Town by-laws defer to the Massachusetts Architectural Access Board (AAB) 521 CMR for accessible parking space requirements. This document requires that one in eight accessible parking spaces be van accessible, requiring specific accommodations for van access. The site plans do not indicate any van accessible spaces. Apex recommends the plans updated to show intended locations for van accessible spaces.

**Response:**

**All of the accessible spaces show a 9' aisle on one side so they are all van accessible.**

32. Pedestrian access lacks connectivity between the buildings and existing sidewalk along Haverhill Street. As noted on Comment 18 above relevant to the TDM measures, Apex recommends evaluating continuous pedestrian access between the site and the nearby existing sidewalk, while also considering opportunities for improving off-site pedestrian accommodations in the vicinity of the site.

**Response:**

**There is a parcel of land between this property and Haverhill Street where the driveway entrance is located. There is a driveway easement that is fully used for the driveway. The owner does not have a right to construct a sidewalk on this parcel of land out to Haverhill Street.**

33. As shown on the site plans, access to the northeast of Building 2 would appear to require a ramp up with a handrail between the ramp and the adjacent sidewalk. Apex requests confirmation that the design intent is accurately interpreted. We recommend calling out the handrail location on the plans to clarify the intent and adding a handrail detail.

**Response:**

**The enlarged view on CS1501 shows the handrail, a label can be added.**

34. The Town by-laws require that one off-street drop-off/pickup area per 25 children be provided for childcare centers. The site does not appear to provide this. Apex recommends updating the plans to accommodate the drop-off/pickup area in compliance with Town by-laws.

**Response:**

**This has been discussed with the Planning Board and the existing configuration is acceptable.**

35. The site plans provided show fire truck maneuvers entering and exiting the driveway on Haverhill Street from west. Apex requests fire truck maneuvers be evaluated for access from Haverhill Street driveway from east, access from High Street driveway from north and south, and circulation throughout the site. We also request information and turning templates on other heavy vehicle types the site is intended to accommodate outside of emergency vehicles.

**Response:**

**Additional turning movements can be added to demonstrate the obvious. The turning route chosen depicts the most likely turn movement based upon the location of the fire station. There will not be large trucks making deliveries to either building so additional vehicle turning templates are not required.**

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We appreciate the opportunity to submit these responses on behalf of the applicant. Please contact me at (781) 287-9924 or [Kenneth.Cram@fando.com](mailto:Kenneth.Cram@fando.com) if you have any questions regarding these responses.

Sincerely,

A handwritten signature in blue ink, appearing to read 'KPC', with a long horizontal flourish extending to the right.

Kenneth P. Cram, PE  
Senior Project Manager | Director of Traffic Engineering