

MEMORANDUM

Date: March 11, 2022

To Ms. Jacki Byerly, Town Planner
Town of Andover
36 Bartlett Street
Andover, MA 01810

From Greg E. Lucas, PE, PTOE, RSP

CC James D. Fitzgerald, PE, LEED AP – EP, Director of Transportation

Subject 140 Haverhill Street – Traffic Peer Review
Review of Response to Comments

Environmental Partners (EP) has reviewed the responses prepared by Bayside Engineering (Bayside) to the review comments raised by EP in our Traffic Peer Review memorandum dated February 3, 2022 and in our Trip Generation Peer Review memorandum dated January 14, 2022 for the proposed Commonwealth Detox/Topsail Facility located at 140 Haverhill Street in Andover, MA. It is understood that the project proposes redevelopment of an existing medical office building to provide an Acute Treatment Services (ATS) and Clinical Stabilization Services (CSS) facility to be known as Commonwealth Detox, and relocation of an existing outpatient facility known as Topsail which is currently operating in the building to be redeveloped.

EP has provided a response (“EP Response 3/11/2022”) to each of the original EP comments (“EP Comment 2/3/2022” or “EP comment 1/14/2022”, as appropriate) and subsequent Bayside responses (“*Bayside Response 3/9/2022*”) as outlined below. Comment grouping and numbering follows the format introduced in Bayside’s response letter.

Comment 1

EP Comment 2/3/2022:

- Typos exist in the descriptions for High Street and the intersection of High Street and the existing site driveway. References to High Street are incorrectly identified as Haverhill Street.
- Haverhill Street is under Town of Andover jurisdiction. (Source: <https://gis.massdot.state.ma.us/roadinventory/>)
- Sidewalks are provided on the south side of Haverhill Street, but end approximately 600 feet east of High Street at the YMCA driveway.
- High Street is functionally classified as an Urban Minor Arterial, not a rural major collector. (Source: <https://gis.massdot.state.ma.us/roadinventory/>)

- Sidewalk is provided on the east side of High Street south of Haverhill Street, but end approximately 200 feet south of the intersection.
- Sidewalks are not present in the vicinity of the existing site driveway on High Street. Reference to Haverhill Street appears to be a typographical error.

Bayside Response 3/9/2022:

Bayside concurs. The noted changes do not have an effect on the capacity analyses performed in the TIAS. Updated descriptions of the roadway and intersection geometry are included in the Appendix.

EP Response 3/11/2022:

Clarification provided; updated descriptions provided in the Appendix are generally accurate.

Comment 1 closed.

[Comment 2](#)

EP Comment 2/3/2022:

The adjustment factor is based on Group R4-R7 for rural roadways, which is not appropriate since Andover is classified as an urban area for the purpose of functional classification of roadways. As such, Group U3 is appropriate based on the functional classification of Haverhill Street as an Urban Principal Arterial; the adjustment factor for Group U3 for December is 1.00, therefore no seasonal adjustment is necessary.

Bayside Response 3/9/2022:

Bayside concurs. Included in the response to Comment No. 3 are updated traffic flow networks for 2021 Existing conditions.

EP Response 3/11/2022:

A review of updated traffic flow networks provided by Bayside reveal accurate application of appropriate seasonal adjustment factors. **Comment 2 closed.**

[Comment 3](#)

EP Comment 2/3/2022:

- While the 1.13 seasonal adjustment factor used by Bayside is conservative and would account for any impact of reduced Merrimack College traffic, it may overstate existing traffic volumes at the study area intersections.
- The April 2020 "Guidance on Traffic Counting Data" published by MassDOT establishes a procedure by which 2019 data is considered current data. 2018 count station data should be grown to 2019 using methods established by MassDOT in this guidance memo, and compared to 2021 data to determine the variance between pre-COVID (2019) and COVID-impacted (2021) data.
- EP requests review and clarification of data presented in Table 1. A cursory review of data presented in the TIAS Appendix reveals discrepancies in peak hour data and resultant calculations for K factor and directional distribution.
- A cursory review of Figure 2 data suggests that individual peak hour data for each study intersection were adjusted to populate Figure 2. Given the proximity of the site drive

intersections to the intersection of Haverhill Street and High Street, a consistent peak hour and volume balancing would be more appropriate.

Bayside Response 3/9/2022:

Bayside concurs that the 1.13 seasonal adjustment factor is conservative and would account for any impact of reduced Merrimack College traffic and may overstate existing traffic volumes at the study area intersections.

Bayside revisited the COVID adjustment calculations utilizing the April 2020 "Guidance on Traffic Counting Data" published by MassDOT. This report establishes a procedure by which 2019 data is considered current data. The 2018 count station data (Station No. 255018) was grown to 2019 using methods established by MassDOT in the guidance memo, and then compared to 2021 data to determine the variance between pre-COVID (2019) and COVID-impacted (2021) data. This resulted in a COVID adjustment factor of 1.12.

Using the updated seasonal adjustment factor from the response to Comment No. 2 and the revised COVID adjustment factor, the daily traffic volumes were re-calculated and are summarized in Table 1. (See Bayside letter for updated Table)

The intersection turning movement count data for the weekday morning peak hour of 7:45 AM to 8:45 AM and weekday evening peak hour of 4:15 PM to 5:15 PM were used to represent the peak hour volumes. These volumes were used, balanced and adjusted for COVID and are shown on Figure 1.

EP Response 3/11/2022:

EP reviewed and concurs with the methodology resulting in a COVID adjustment factor of 1.12. Clarification is requested on the derivation of data provided in Table 1; a cursory review of hourly volumes and directional distribution reveals variances from the presented data.

A review of updated traffic flow networks provided by Bayside reveal accurate application of appropriate seasonal and COVID-19 adjustment factors in the peak hour volumes shown in Figure 1.

[Comment 4](#)

EP Comment 2/3/2022:

- The crash rate worksheet included in the Appendix reveals a crash rate of 0.59, a slight discrepancy from the rate summarized in Table 3 but still below both the Statewide and District 4 averages for signalized intersections. EP requests clarification of the K factor utilized for the crash rate worksheet.
- EP notes that 2020 and 2021 are not considered "closed" years for MassDOT, and as such may not contain all reported crashes for these years.

Bayside Response 3/9/2022:

Noted. The Statewide MassDOT crash rate for signalized intersections (as of June 26, 2018) is 0.78 and 0.57 for unsignalized intersections. The MassDOT District 4 crash rate for signalized intersections is 0.73 and 0.57 for unsignalized intersections. The study area intersections fall below both the Statewide and MassDOT District 4 averages.

EP Response 3/11/2022:

Clarification provided; **Comment 4 closed.**

[Comment 5](#)

EP Comment 2/3/2022:

EP confirmed the closest stop for Route 33 is approximately ½ mile east of the project site.

Bayside Response 3/9/2022:

Bayside concurs.

EP Response 3/11/2022:

Comment 5 closed.

[Comment 6](#)

EP Comment 2/3/2022:

EP confirmed provided data, and notes that MVRTA Route 39A also provides service to the project site, running on weekdays and Saturday.

Bayside Response 3/9/2022:

Bayside concurs.

EP Response 3/11/2022:

Comment 6 closed.

[Comment 7](#)

EP Comment 2/3/2022:

- Trip distribution for the 7 Tantalón Road site is presented in the TIAS Appendix and assumes a distribution of approximately half of the site-generated trips to and from Haverhill Street to the east of the residential project site, which as a result have the potential to impact the study area for the 140 Haverhill Street project. EP notes that this represents a conservative analysis; given the proximity of Tantalón Road to Route 28 and the proximity of Route 28's interchange with Interstate 495, the majority of site generated traffic for the proposed residential development is likely destined to and from the west and will have little to no impact on the study area for the 140 Haverhill Street site.
- Verify if adjustments are appropriate to 2028 No-Build volumes summarized in Figure 3 based on prior comments on 2021 Existing data presented in Figure 2.

Bayside Response 3/9/2022:

The 7 Tantalón Road project is located approximately 0.7 miles west of the proposed site. As no traffic study was performed for the project, existing count data from Haverhill Street in front of the site was used to determine an anticipated trip pattern for the 7 Tantalón road residential project. As a result, half of the site-generated trips were assigned to the roadway network. Figure 2 summarizes the revised 2028 No-Build traffic flow networks.

EP Response 3/11/2022:

Clarification provided; EP takes no exception to trip distribution assumptions for the 7 Tantalum Road site. Revised 2028 No-Build traffic flow networks were reviewed and have accurately applied growth to the updated existing peak hour volumes. **Comment 7 closed.**

Comment 8**EP Comment 1/14/2022:**

- Verification of federally-mandated staffing levels should be provided to verify that proposed staffing levels are in compliance with said standards.
- The project description identifies outpatient services; however, stated trip generation does not provide any allowance of patient trips except for five (5) patient admissions and discharges per day. Verify that patient-generated trips have been adequately accounted for.
- Kitchen/maintenance staff schedules in the worksheet do not match the description provided in the memorandum. Staff are assumed to arrive for a 7:00 AM start time in the worksheet, but the memorandum states that these staff will follow the 9:00 AM to 5:00 PM schedule of other administrative staff. EP notes that this discrepancy results in more trips assigned in the weekday morning peak hour, resulting in a conservative estimation.
- The majority of delivery trips are assumed to occur outside the peak hour. To provide a conservative estimate, an assumption of peak hour delivery trips should be made.

Bayside Response 3/9/2022:

There are no federally mandated staffing levels. They are State mandated. Contained in the Appendix are the state regulations.

Commonwealth Detox does not offer outpatient services. The services provided for patients are akin to outpatient services when compared to the actual services offered. Based on operator experience, admission/discharges average five (5) per day.

One (1) kitchen staffer will arrive around 7:00 AM to prepare the breakfast meal for Commonwealth Detox. The remaining staff will arrive around 8:30 AM. All kitchen staff will leave between 5:00 PM and 5:30 PM.

Many delivery trips will occur outside the peak hours, and most are expected to be of smaller trucks and vans (Amazon, UPS, Federal Express, etc.). Sysco trucks (food service and supplies) are expected two (2) to three (3) times per week, with deliveries expected between 7:00 AM and 8:00 AM. Trash pickup is expected once per week, also between 7:00 AM and 8:00 AM.

The daily total for the Topsail facility has been updated to account for the evening program which occurs three (3) nights per week.

(see Bayside letter for revised Table 2 and Table 3)

Comparing the peak-hour trip generation data from Tables 2 and 3 shows that based on the nature of operations for each facility, each peak at different times during peak periods.

Overall, looking at the two facilities combined, the combined weekday morning peak hour occurs from 8:00 AM to 9:00 AM. Fifty-eight (58) vehicle trips (57 entering and 1 vehicle exiting) are expected. The

combined weekday evening peak hour occurs from 3:45 PM to 4:45 PM peak hour, where 48 vehicle trips (3 vehicles entering and 45 vehicles exiting) are expected.

Therefore, to be conservative, the higher peak hour identified in Table 3 was chosen to represent a worst case analysis.

EP Response 3/11/2022:

Revised data presented in Table 2 and Table 3 introduce discrepancies that require clarification. It is understood that the peak hour of adjacent street traffic and the peak hour of the generator vary; however, data shown for the peak hour of adjacent street traffic shows a total of 4 trips (3 entering, 1 exiting) for both facilities between 7:45 AM and 8:45 AM, while date for the peak hour of the generator shows 58 trips (57 entering, 1 exiting) between 8:00 AM and 9:00 AM. This presumes that all additional trips occur between 8:45 AM and 9:00 AM, which is likely given the number of employees at both facilities expected to begin shifts at 9:00 AM. Regardless, Bayside has conservatively applied the higher number of trips expected in the morning peak hour of the generator to the peak hour of adjacent street traffic; EP concurs with this approach. **Comment 8 closed.**

[Comment 9](#)

EP Comment 2/3/2022:

- The distribution of existing trips may not be an accurate predictor of future trips, as it represents trips generated by both existing buildings and may be driven by the most proximate driveway to the specific building and/or trip destination; for example, a trip generated by the existing Doctors Park II building may utilize the High Street driveway, even if the trip is destined to the west on Haverhill Street. EP notes that minor adjustments in trip distribution percentages would not fundamentally change the resultant trips, and as such do not fundamentally change the conclusions of the TIAS.
- Trip distribution should be updated as appropriate based on comments provided by EP in our January 14, 2022 trip generation memorandum.

Bayside Response 3/9/2022:

Bayside concurs. The trips generated in the response to Comment No. 8 were assigned to the roadway network and are shown on Figure 3. Figure 4 shows the updated 2028 Build peak hour traffic volumes.

EP Response 3/11/2022:

Trips generated appear to be accurately distributed through the roadway network. **Comment 9 closed.**

[Comment 10](#)

EP Comment 2/3/2022:

EP notes that this results in a conservative assessment of site driveway trips and operational analysis results.

Bayside Response 3/9/2022:

Bayside concurs.

EP Response 3/11/2022:**Comment 10 closed.****Comment 11****EP Comment 2/3/2022:**

- No-Build and Build conditions are mislabeled as 2026.
- Analysis results indicate that the Haverhill Street eastbound approach is at or near capacity presently in the weekday evening peak hour and in need of mitigation to support additional traffic load. Traffic signal timing optimization should be considered.
- Verify that yellow and all red clearance times are accurately reported for the signalized intersection. Recommended modifications to signal timing should include conformance to MUTCD standards for vehicle and pedestrian clearance times.
- EP recommends excluding Synchro-reported LOS and Delay results from the “Lanes, Volumes, Timings” report presented in the Appendix, which presents conflicting results when compared to the HCM 2010 reports. It is understood that the HCM 2010 results were compiled in Table 13.
- Verify peak hour factors for 2021 Existing weekday evening peak hour analysis.
- Verify heavy vehicle percentages for the Haverhill Street eastbound left entering the site driveway in both the weekday morning and weekday evening peak hours.

Bayside Response 3/9/2022:

The headings on Table 13 were mis-labeled. ‘2028’ should have been used instead of ‘2026’. The analysis results were for the 2028 No-Build and Build conditions.

Updated capacity analyses were performed using the updated traffic volumes. The signal timings, peak hour factors and heavy vehicle percentages were re-verified. The Synchro-reported LOS and Delay results from the “Lanes, Volumes, Timings” report presented in the Appendix have been excluded from the capacity analysis reports in this response. The results of the signalized analyses are shown in Table 4 and the results of the unsignalized analyses are shown in Table 5. The capacity analysis reports are included in the Appendix.

The updated analysis results indicate that the Haverhill Street eastbound approach is near, but below capacity presently during the weekday evening peak hour. Under future No-Build and Build conditions, this approach will continue to be below capacity presently during the weekday evening peak hour. The addition of the site generated traffic has minimal impact on this approach.

Bayside concurs that traffic signal timing optimization should be considered. This should be considered now by the Town of Andover as it is dictated by current traffic conditions.

EP Response 3/11/2022:

Clarification provided; updated materials have been reviewed and are acceptable. EP notes that revisions in adjustment factors addressed through comments 2 and 3 result in reductions in future volumes, resulting in improved LOS and delay when compared to the summary table in the initial TIAS.

EP recommends that the Applicant provide analysis for traffic signal optimization to be considered by the Town.

Comment 12

EP Comment 2/3/2022:

- Parking assumptions for the Topsail facility assume 10 patients drive themselves, while trip generation and distribution estimates assumed 20 patients drive themselves. It should be noted that the worst case is stated where all patients drive themselves, and that proposed parking supply exceeds this worst case demand of 52 parking spaces.
- The stated parking supply for the Commonwealth Detox and Topsail facilities are based on lot lines as shown on the site plans and include splitting the parking area to the west of the Haverhill Street site drive. Although these spaces are more directly adjacent to the Commonwealth Detox facility, 25 of the spaces in the area are counted towards Commonwealth Detox, while 31 are counted towards Topsail, in addition to the 44 spaces more directly adjacent to the proposed Topsail facility. While both individual facilities have a parking supply which exceeds expected demand, the Applicant should confirm that all parking spaces on site will be available to staff, patients, and visitors to either facility.
- One additional accessible space is required for the Topsail facility to meet the requirements of 521 CMR. EP recommends designating all three spaces along the east side of the building as accessible.
- The Zoning Bylaws include a requirement of four parking spaces for each “doctor or dentist”. While the parking table in the site plans identifies five doctors per site in their parking space calculations, it is unclear how this correlates to the staff list provided in the TIAS.
- The Zoning Bylaws require “an adequate number” of off-street loading areas for any use which may be served by delivery vehicles. The TIAS includes a description of expected deliveries for linens, food items, and other medical deliveries or pickups for the Commonwealth Detox facility. The site plans should identify the loading area, as well as the trash pick up area.
- A loading area should similarly be identified on the plan if deliveries are expected for the Topsail facility.

Bayside Response 3/9/2022:

Bayside concurs that the worst case parking demand (if all patients drove to the Topsail facility is 52 parking spaces. Seventy-five (75) spaces have been provided.

Both individual facilities have a parking supply which exceeds expected demand. One hundred and fifty-three (153) total spaces are provided and all parking spaces on site are available to staff, patients, and visitors to either facility.

One additional accessible space will be provided for the Topsail facility to meet the requirements of 521 CMR.

The Andover Zoning Bylaws do include a requirement of four (4) parking spaces for each “doctor or dentist”. The parking table on the Site Plans was prepared and attempted to ‘meld’ the Bylaws with the

proposed use in the parking space calculations. This assessment was performed as there are several small offices on the second floor. This does not correlate with the staff list provided in the TIAS.

There is a loading area for the Commonwealth Detox facility near the northwest corner of the proposed building. A note will be added to the Site Plans designating this area. The dumpsters are also located within this area.

A loading area has not been provided for the Topsail building as they will not be getting any large deliveries. The Topsail building will use the dumpsters at the Commonwealth Detox building.

EP Response 3/11/2022:

Information provided; EP recommends verification by the Town of site plan modifications as part of site plan approval.

EP requests clarification of the response related to parking space calculations, stating that “there are several small offices on the second floor”. It is unclear if this use is supplemental to or in addition to the proposed use.

[Comment 13](#)

EP Comment 2/3/2022:

- “Required minimum” ISD values included in Table 15 are noted to indicate desirable ISD values and should include only the most restrictive value for the directional movement proposed. For the Haverhill Street site driveway, the distance looking to the east would only include the lower value for vehicles turning right, while the distance looking to the west would include the higher value for vehicles turning left, as they are contemplating crossing both directions of traffic.
- Measured sight distance does not meet desirable ISD values for the Haverhill Street driveway looking to the west, and for the High Street driveway in both directions. Sight triangles should be included on the site plans to clearly indicate areas where low height vegetation must be maintained to provide clear sight lines, and to verify that clear sight lines can be maintained within the site property boundaries.

Bayside Response 3/9/2022:

The sight distances are summarized in Table 6 showing only the most restrictive value for the directional movement proposed. (see Bayside letter for Table 6)

As can be seen in Table 6, the SSD measurements performed at the site driveway intersections with Haverhill Street and High Street indicate that the intersection exceeds the recommended minimum requirements based on the 85th percentile speeds. In accordance with the AASHTO manual, “If the available sight distance for an entering or crossing vehicle is at least equal to the appropriate stopping sight distance for the major road, then drivers have sufficient sight distance to anticipate and avoid collisions. However, in some cases, this may require a major-road vehicle to stop or slow to accommodate the maneuver by a minor-road vehicle. To enhance traffic operations, intersection sight distances that exceed stopping sight distances are desirable along the major road.” Accordingly, the ISD should be at least equal to the SSD, which would allow a driver approaching the minor road to safely stop. It is

recommended that any proposed landscaping be less than three (3) feet in height and maintained for sight lines. Along the Haverhill Street frontage, it is recommended that no plantings occur within ten (10) feet of the travelled way to maintain sight lines. Sight lines will be added to the Site Plans.

EP Response 3/11/2022:

Clarification provided. EP recommends verification by the Town of site plan modifications as part of site plan approval. **Comment 13 closed.**

[Comment 14](#)

EP Comment 2/3/2022:

- Analysis results indicate that the Haverhill Street eastbound approach is at or near capacity presently in the weekday evening peak hour and in need of mitigation to support additional traffic load. Traffic signal timing optimization should be considered.
- Sight triangles should be included on the site plans to clearly indicate areas where low height vegetation must be maintained to provide clear sight lines, and to verify that clear sight lines can be maintained within the site property boundaries.

Bayside Response 3/9/2022:

The updated analysis results indicate that the Haverhill Street eastbound approach is near, but below capacity presently during the weekday evening peak hour. Under future No-Build and Build conditions, this approach will continue to be below capacity presently during the weekday evening peak hour. The addition of the site generated traffic has minimal impact on this approach.

Bayside concurs that traffic signal timing optimization should be considered. This should be considered now by the Town of Andover as it is dictated by current traffic conditions.

Sight lines will be added to the Site Plans.

EP Response 3/11/2022:

Information provided. See responses to comment 11 and comment 13.