

MEMORANDUM

To: Ms. Katherine Malgieri
Director Planning & Community Development Department
365 Boston Road
Billerica, MA

From: Lisa Juan, PE
William Scully, PE
Maria Mesta, PE (TX)

Date: January 7, 2026

***Subject: Traffic Engineering Peer Review
Proposed 1 & 2 Federal Street Redevelopment***

In response to the request by the Town of Billerica, Kimley-Horn has conducted a traffic engineering peer review of the following documents related to the Applicant's (JLB Realty, LLC) proposal to construct two (2) multifamily complexes at 1 & 2 Federal Street in the Town of Billerica, MA ("Project") within the MBTA Communities Multifamily Overlay District. The purpose of the review is to evaluate the TIAS completed for the proposed redevelopment and assess whether reasonable issues/concerns/flaws exist regarding the proposed use and project design as they relate to traffic operations and safety, including access and interactions with traffic signals and flows on the abutting streets.

- Traffic Impact & Parking Assessment for Proposed 1 & 2 Federal Street Redevelopment, dated October 2025, prepared by TEC, Inc.
- Proposed Site Development Plans for 1 & 2 Federal Street, dated November 2025, prepared by Allen & Major Associates, Inc.

The #1 Federal Street tract is located northeast of the intersection of Concord Road at Federal Street. This tract is currently occupied by 60,000 square feet (SF) of office building and provides 195 off-street parking spaces. The #2 Federal Street tract is located at the southeast corner of the intersection of Concord Road at Federal Street. This tract is currently occupied by 98,000 SF of office space and provides 316 off-street parking spaces. The redevelopment is proposed to raze the existing buildings and fully redevelop each property, including up to 255 multifamily residential units and up to 442 off-street parking spaces. At #1 Federal Street, this will include a three-story residential building with 81 residential units and 143 off-street parking spaces, and at #2 Federal Street, this will include a three-story residential building with 174 residential units and 299 off-street parking spaces.

Access to the Project site will be provided by four (4) driveways, two (2) full-access driveways along Federal Street to access the northern tract (#2 Federal Street), and two (2) full access driveway on Federal Street to access the southern tract (#1 Federal Street). *The existing driveways will be fully reconstructed as a result of the site reconfiguration.* It should be noted that the southern drive serving #2 Federal Street provides access to #1 Federal Street.

The traffic related peer review examined the above materials in order to develop opinions as to the adequacy of the following:

- Study Area
- Data Collection
- Crash and Safety Analysis
- Traffic Forecasts
 - Background Growth
 - Proposed Development
- Parking
- Queuing
- Sight Distance
- Operations Analysis
- Recommendations
- Analysis Including Current Signal Operations
- Proposed Access and Circulation
- Conclusions/General Comments

The results of this review are summarized for each of these items in the following pages. Where determined appropriate, additional information has been requested.

STUDY AREA

The study area consisted of Concord Road and Federal Street. Concord Road is a four-lane urban minor arterial roadway under the Town of Billerica's jurisdiction; Federal Street is a local road under the Town of Billerica's jurisdiction. Two (2) existing study intersections were included: Concord Road at Federal Street/Brightview Concord River Driveway (two-way STOP controlled), and Concord Road at Middlesex Turnpike (signalized).

Comment 1: The Route 3 northbound interchange is just 300 feet from Federal Street, and projections indicate that 65% of traffic is traveling to or from this interchange. Why wasn't the Route 3 interchange included in this assessment? Are there any known safety issues or operational concerns at this intersection?

Comment 2: Under Section: "Existing Conditions, Geometry", Concord Road is specified as a minor arterial roadway with 2-6 lanes. Please specify the cross-sectional lane geometry near the site, since it is a four-lane undivided roadway, 2 lanes in each direction.

Comment 3: Under Section: "Existing Conditions, Geometry", please provide a description of Federal Street, since the site will exclusively take access via this roadway. The description should include the speed limit, number of lanes, pedestrian and bike facilities, and functional classification, similar to the information provided for Concord Road.

DATA COLLECTION / EXISTING TRAFFIC VOLUMES

Turning Movement Counts (TMCs) were collected in July 2025 at the intersections of Concord Road at Federal Street / Brightview Concord River Driveway, and Concord Road at Middlesex Turnpike, when schools were *not* in session. Tube counts for 48 hours were collected on Concord Road, north of Federal Street, and along Middlesex Turnpike, east of Concord Road, from Wednesday, July 23, 2025, through Thursday, July 24, 2025. Turning Movement Counts were conducted for the two (2) study intersections.

The two (2) peak hours included typical Weekday AM and PM peak hours. The July 2024 seasonal adjustment factor volumes were above average-month conditions, so no adjustments were considered

Comment 4: *As noted in MassDOT TIA Guidelines, please include the seasonal adjustment factor worksheet as part of the Appendix.*

Comment 5: *Data was collected when school was out of session. TEC states that schools don't significantly affect traffic patterns, but no technical evidence was given. Please confirm this with supporting data, for example, by comparing nearby historical ADTs to current counts.*

Comment 6: *Based on the raw turning movement counts, Figure 2. 2025 Existing Year Conditions, and the Synchro Analysis provided in Attachment K, please address the volume discrepancy at the northbound and southbound approach of the intersection of Concord Road at Middlesex Turnpike.*

Comment 7: *Regarding the section "Existing Traffic Volumes, Turning Movement Counts," please specify the AM and PM peak hours utilized in the analysis for each intersection per the data collected.*

Comment 8: *Please provide the signal timing plans for the intersection of Middlesex Turnpike at Concord Road for verification of the signal timings in Synchro.*

CRASH AND SAFETY ANALYSIS

The most recent five-year period available, 2019 through 2023, was reviewed to examine motor vehicle crash trends. The calculated crash rates at the study intersections do not exceed MassDOT statewide crash rates or District 4 crash rates. There were no fatal crashes and no ped/bike crashes.

Comment 9: *Are there any crash trends along Federal Street/existing site driveways at the site locations when the buildings were occupied?*

TRAFFIC FORECASTS

The analysis of impact was predicated on the comparison of future (Year 2032) No-Build and Build estimated traffic conditions. Forecasting future No-Build traffic was based on a general background growth rate and known or approved site-specific development projects in the vicinity of the proposed project that could affect traffic flow in the study area.

BACKGROUND GROWTH

A background traffic growth rate of 0.85% per year was determined based on the Traffic Growth in the Northern Middlesex Region Traffic Volume Report. The 2032 No-Build traffic volumes were developed by applying the 0.85% per year growth rate to the existing peak hour traffic volumes, the background traffic volumes, and the existing office re-occupancy site trips.

Comment 10: *The report does not present the growth rate calculations based on historical traffic data and only uses information from the NMCOG Traffic Volume Report published in 2022. Please clarify or include these calculations using MassDOT TCDS data.*

Comment 11: *Does the applicant have any information about any other buildings within the cul-de-sac? Were the trips for the neighboring office spaces accounted for somehow?*

Comment 12: *Please provide further information pertaining to the background projects (Specific Development by Others). When are the build out years for each specific development? Please*

provide relevant pages from the Traffic Assessment prepared by McMahon and Associates to show that the proposed site will generate less trips than the existing land uses.

Comment 13: It should be noted that the current office buildings on #1 Federal and #2 Federal are vacant, and therefore, no traffic demand for the existing conditions was captured during data collection. Because of this, TEC added the potential trips that could be generated from the existing office development and added them to the no build conditions. The result generated by difference between the office development trips and the proposed use trips was added to no-build conditions come about the build conditions. Please confirm this was the methodology and include it in the report.

PLANNED ROADWAY IMPROVEMENTS

The report identified *Yankee Doodle Bike Path* as a future infrastructure project in the vicinity of the study area by the Town of Billerica. The project will include constructing a 4-mile bike path near the project site. The project will not alter traffic at the study intersections.

Comment 14: Please provide a schematic of the planned trail and indicate the location of the site in relation to the proposed improvement.

TRIP DISTRIBUTION AND ASSIGNMENT

The traffic distribution indicates that 65% of site traffic is expected to/from the south on Concord Road, 20% from/to the east of Middlesex Turnpike, and 15% to/from the north on Concord Road, based on an analysis of existing travel patterns.

Comment 15: Please revise Figure I-1, Trip Distribution, and Table 6 - Trip Distribution Summary, as the trip distribution percentages do not match. For example, Table 6 shows 70% to/from the south on Concord Road, which is different from Figure I-1.

Comment 16: The 2032 Build Conditions should document the traffic volume that will be projected on the site driveways. Currently, only the existing intersections are being reported. These numbers should appear in the Build Peak Hour Figures (Figure 6), be evaluated using Synchro, and subsequently reported in the LOS tables.

Comment 17: Please share the trip distribution used for reoccupied office space site trips. Attachment I includes tables for Billerica residential and office trip patterns—was this information included intentionally?

PROPOSED DEVELOPMENT

The proposed project is a 255 dwelling unit low rise multifamily apartment. The trip generation for the proposed development and the office reoccupancy was determined using ITE *Trip Generation Manual*, 11th Edition and the following land use codes. LUC 220 – Multifamily Housing (Low-Rise), and LUC 710 – General Office Building.

Comment 18: This proposed and existing development's land use code (LUC) is appropriate.

Comment 19: The language throughout the report, and the Trip Generation Summary, provided in Table 5, should be revised, as the new land use generates fewer daily trips than the existing land use. (+9, and +18, should be -9 and -18). Please clarify.

Comment 20: The footnote describing the general office specifies 185,000 square feet of office space, when it should say 158,000 square feet of office space. Please correct this discrepancy.

PARKING

The TIAS assessed parking demand for this development. According to the ITE *Parking Generation Manual, 6th Edition*, LUC 220 Multifamily Housing estimates that 387 off-street parking spaces would be needed based on the proposed bedroom mix. The report states the planned parking will meet the 85th percentile peak demand.

Additionally, per the Town of Billerica's bylaw (Section 5.E.12(F)(1)), 1.5 spaces are required per one-bedroom unit and 2 spaces per two or more bedrooms, totaling 442 required spaces. As this stricter zoning requirement is codified, the site must provide 442 parking spaces.

Comment 21: The 442 parking spaces are adequate for this proposed development.

Comment 22: Please include a parking schedule with the proposed bedroom mix, and add a screenshot of Town of Billerica's bylaw as part of Attachment L.

QUEUING

The TIAS conducted an assessment of the queuing using Synchro simulation software.

Comment 23: It appears that the westbound queue along Federal Street will block the westerly driveway at #1 Federal Street, please address this as part of the report.

Comment 24: As part of the Intersection Capacity and Queue Analysis Summary (Table 10), please provide the turn bay lengths as a column to determine whether the projected queues exceed the existing link capacity.

Comment 25: Please clarify why the Intersection Capacity and Queue Analysis Summary Table's first page lists two numbers per movement queue (##), while the subsequent page shows only one. Also, expand the footnotes to explain how/which queues are being reported.

Comment 26: The Town of Billerica requests a queuing analysis at the site driveways based on the trip assignment.

SIGHT DISTANCE

The sight distance evaluation found that the sight distance is adequate for the proposed driveways. TEC recommends the removal of any shrubbery that might directly block a driver's line of sight.

Comment 27: As part of the final submission, sight line triangles should be overlaid on the site plan to support the findings of the sight distance evaluation and prevent any future proposed plantings, landscaping, and signage that might obstruct sight distance.

OPERATIONS ANALYSIS

Traffic operations within the study area were analyzed using Synchro software, which is an appropriate methodology for this assessment.

Comment 28: No operational improvements are proposed, as the new site will generate fewer trips than the current one.

RECOMMENDATIONS

For the Build Conditions, the recommendations are the following:

- Vegetation management: Maintain clear sight lines along Concord Road and Federal Street through trimming and landscaping controls.
- Bikeway easement: Grant a permanent easement for construction of the proposed Yankee Doodle Bike Path.
- Pedestrian connectivity: Provide an internal sidewalk connection to the Yankee Doodle Bike Path and nearby LRT bus stop.
- Pavement markings & signage: Reapply pavement markings and install signage to clarify shared and exclusive turn lanes on Federal Street.
- Stop control improvements: Repaint stop lines and install new stop signs on Federal Street and at site driveway approaches.

Comment 29: The applicant plans to join a Travel Demand Management (TDM) Program to promote public transit. Has joining Middlesex 3 TMA been considered?

Comment 30: Will the site plan include the internal sidewalk connecting the future Yankee Doodle Bike Path? Please provide a visual showing how this connection will be made. Please clarify the construction timeline and whether this sidewalk will be accessible to the public.

Comment 31: It appears that a crosswalk will be provided to connect the buildings across Federal Street, please add this measure as an improvement within the report.

ANALYSIS INCLUDING CURRENT SIGNAL OPERATIONS

Traffic volumes in the study area were grown to the year 2032 for the No-Build and Build Future Conditions.

Comment 32: It appears that signal timing was optimized in the No-Build and Build conditions. Typical practice is to run the analysis with the set timing through no-build and build conditions, so the measure of impact is understood, and then a build mitigation with the signal timing optimization would be included.

Comment 33: Provide information on the existing signal timing setting prepared by MassDOT.

Comment 34: Is the signal being evaluated coordinated with traffic signals at Middlesex Turnpike and Route 3? If not, is this something that might benefit operations at this intersection?

PROPOSED ACCESS AND CIRCULATION

As part of the TIA Review, the Town of Billerica requested a comprehensive evaluation of internal traffic circulation. Kimley-Horn performed the circulation study, referencing the Vehicle Movement Plan supplied by the applicant.

Comment 35: Kimley-Horn is expected to conduct a comprehensive review of both the parking configuration and on-site traffic circulation. A "Billerica" fire truck was tested through both buildings, and no issues with vehicle movement were identified. Curb dimensions appear suitable for the required turning radius. Internal sidewalks will include crosswalks at all major intersections, and a crosswalk across Federal Street will be provided to connect the two sites. The sidewalk connection to the future Yankee Doodle Path Trail is not depicted but will ultimately enhance pedestrian and bicycle access to the closest LTRA bus stop on Middlesex Turnpike. It is important

to note that potential concerns remain at the western driveway to #1 Federal Street, as westbound traffic queues may block the intersection for vehicles entering or exiting the site driveway.

Comment 36: It is mentioned as part of the report that joint access will be provided at the easterly driveway, is there an easement agreement between the two properties for #2 Federal St or a written agreement to understand cross-section access and parking?

CONCLUSIONS/GENERAL COMMENTS

Comment 37: The Town of Billerica requires sidewalk facilities along site frontage. Will the site include sidewalk facilities on Federal Street and Concord Road? Please clarify.

Comment 38: Please provide the overall site plan (1-2 pages) as part of the appendix or as a figure for ease upon resubmittal.

Comment 39: As previously mentioned in this comment letter, please provide an analysis of the site driveways. This includes trip assignments, queuing analysis, and Synchro reporting (delay, LOS, V/C).

Comment 40: Please include an Executive Summary and a Table of Contents as part of the report upon resubmittal.

Comment 41: Although the Town believes a traffic signal should be installed at the intersection of Concord Road and Federal Street, a comprehensive signal warrant analysis was performed, and the reviewer concurs that the warrants have not been met. Furthermore, because the location does not qualify for any reductions specified in the MUTCD, projected trip volumes generally do not exceed the thresholds required at full capacity. Installing a signal at this location would result in less than a ¼ mile spacing from the nearest existing signal, which may be considered undesirable.

Comment 42: Advisory comment—As part of the resubmittal, please add a Comment Response Letter addressed to the Town of Billerica and respond to all previous comments.