

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 12, 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 also 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 the south along Concord Road. The interchange of Route 3 with Concord Road should be included in the assessment.

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. The land uses along Federal Street along with their level of building vacancies should also be provided.

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: The traffic study was conducted while school was not in session. As a result, it does not capture school-related vehicular, pedestrian, and bicycle activity that materially affects peak-hour operations and safety. Without either an analysis that is based on school period traffic data or supporting data that provides a strong basis for the appropriate adjustments to present the most appropriate and reasonable traffic volume conditions, the study may underestimate congestion and relative safety in the project-specific area.

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: Upon resubmission, please provide signal timing plans for all signalized intersections included in the modeling. The relevant intersections include Middlesex Turnpike at Concord Road and the Route 3 interchange.

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: Crash and Safety Analysis – According to Town sources, police details were required at this intersection during peak commuting hours prior to March 2020, with the cost borne by adjacent businesses. This indicates that safety and operational issues existed at the intersection before the COVID-19 pandemic. However, the buildings served by this intersection have not been fully occupied since before the pandemic, and traffic conditions during this period are not representative of typical pre-COVID operations. The crash data presented in the assessment covers the years 2019–2023 and therefore does not accurately reflect historical crash experience under full occupancy conditions. According to MassDOT crash data, the intersection experienced four crashes per year in 2013 and 2014, and three crashes per year in 2015 through 2018. This earlier data more accurately represents normal operating conditions and should be considered in evaluating the intersection’s safety performance. Please respond to the above.

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 Federal Street cul-de-sac? They appear largely vacant. Were the trips for the neighboring office spaces accounted for somehow? If not, they need to be incorporated and the analysis updated.

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 of 300 Concord Road prepared by McMahon and Associates to show that the proposed site will generate less trips than the existing land uses since it is noted "it is not anticipated that the project will significantly increase traffic volumes in the area and therefore has been assumed to be part of the documented growth rate."

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. Additionally, at least half of the building at 4 Federal Street was under construction or unoccupied at the time of the study. The remaining buildings in the existing park appear to be fairly vacant as noted above. If true, the existing traffic counts would be further affected by this condition, resulting in the need to incorporate further adjustments for the future conditions to represent both the no-build and build conditions. Please address this matter and if appropriate, provide details on the additional adjustments.

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: *Given the language throughout the report, and in 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 that 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 expected to be 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 revised 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: Despite the claim that no operational improvements are required because the new site will generate fewer trips than the current site does, there remains a perception based on pre-Covid conditions that a traffic signal is needed at the intersection of Concord Road and Federal Street as part of this redevelopment. At the very least, the Planning Board should request that a new traffic study be conducted once the buildings reach 85%-100% occupancy, and that the developer be responsible for funding the study and any improvements required as a result.

RECOMMENDATIONS

For the Build Conditions, the TIAS 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 bike path easements have been taken by the Towns through the eminent domain process. The Property Owner has been awarded \$238,000 for the easements that were taken for construction and operation of the Yankee Doodle Bike Path. The Property Owner has yet to claim damages. The Town should encourage the Property Owner to consider donating the easements.

Comment 30: The Town generally requires sidewalks along all property frontages, in this case, both Concord Road and Federal Street. There are no sidewalks currently or proposed along the frontage of #2 Federal Street on either Federal Street or Concord Road. As a result, there is no pedestrian connectivity between the eastern and western sidewalks. It is recommended to construct sidewalk along the frontage, unless a relief is requested due to site constraints.

The warrants for the traffic signal at the intersection of Concord Road and Federal Street should be re-evaluated based on our comments noted above

In addition, the Applicant should grant a public access easement through the property at #2 Federal Street to allow pedestrian and bicycle access from Federal Street to the bike path for public use.

Comment 31: The applicant plans to join a Travel Demand Management (TDM) Program to promote public transit. The Middlesex 3 TMA should be considered to fulfill this commitment.

Comment 32: Sheet C-107 of the plan set shows sidewalk connection from Federal Street to the bike path, but it does require clarification. It is currently shown as a dead end. Please identify the bike path location and label it to be constructed by others. Please clarify the construction timeline and whether this sidewalk will be accessible to the public.

Comment 33: 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 34: 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 35: Provide information on the existing signal timing setting prepared by MassDOT.

Comment 36: Is the signal being evaluated coordinated with traffic signals at Middlesex Turnpike and Route 3 (interchange) If not, is this something that might benefit operations at this intersection and traffic flow along the section of Concord Road.

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 37: As part of our peer review scope, Kimley-Horn conducted a review of both the parking configuration and on-site traffic circulation. As shown in the site plan package, 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 38: It is mentioned as part of the report that joint access will be provided at the easterly driveway. Is there a cross-easement agreement between the two properties for #2 Federal St or a

written agreement to understand joint access and parking? Please label the existing access easement with the legal reference and plan reference. If it does not exist, access to the residential parking along the south side of the building (#2 Federal Street) is not guarantee that could affect the development. Please provide proof of this cross-easement agreement.

CONCLUSIONS/GENERAL COMMENTS

Comment 39: The Town of Billerica requires sidewalk facilities along site frontages. As a result, it is recommended that the Applicant construct sidewalk along the frontage of the property on Federal Street and construct sidewalks along the property on Concord Road.

Comment 40: Please provide the overall site plan (1-2 pages) as part of the appendix or as a figure for review convenience upon resubmittal.

Comment 41: 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 42: Please include an Executive Summary and a Table of Contents as part of the report upon resubmittal.

Comment 43: KH agrees with TIA that a traffic signal is not warranted at this location. However, this traffic study was completed while buildings were not completely occupied. Please see Comments #9, 28, and #29. The warrants for a traffic signal at the intersection of Concord Road at Federal Street need to be re-evaluated based on our comments noted above. If a signal is still not warranted based on the estimated conditions, consider a recommendation as follows: The Applicant shall complete a traffic study relative to the Federal Street/Concord Road intersection, including the adjacent signalized intersections, within one year of the completion and full occupancy of the development. A traffic signal shall be installed at said intersection at the expense of the Applicant if a signal is warranted. Cost shall include modifications to the adjacent signals as needed to coordinate the signals.

Comment 44: The proposed crosswalk across Federal Street shall be designed and installed per the Town standard crosswalk detail. Additionally, include in the report/plans that proposed pavement markings, and signage shall include appropriate crosswalk and signage for the crosswalk on Federal Street that connects the two properties.

Comment 45: 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.