

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: February 9, 2026

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

Kimley-Horn has conducted a second review of the following documents related to the Applicant's (Cafua Management Company, LLC) proposal to construct a commercial development (Project) located at 796 Boston Road (Route 3A) in the Town of Billerica, MA.

- Proposed Residential Development – 1 & 2 Federal Street – Billerica, MA Response to Traffic Engineering Peer Review, dated January 24, 2026, prepared by TEC, Inc.
- Revised Traffic Impact & Parking Assessment (TIPA) for Proposed 1 & 2 Federal Street Redevelopment, dated January 24, 2026, prepared by TEC, Inc.
- Revision 1: Proposed Site Development Plans for 1 & 2 Federal Street, dated January 21 2026, prepared by Allen & Major Associates, Inc.

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).

- 1. K-H 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.***

TEC Response: The Applicant has been in previous contact with the Massachusetts Department of Transportation (MassDOT) regarding the proposed redevelopment project since the inception of the TIPA and permitting process. This coordination with MassDOT included the applicability of a Permit to Access State Highway (both "direct" and "indirect"). An "indirect" Permit to Access State Highway will be necessary as the site directly abuts State Highway Layout (SHLO) along the US Route 3 Northbound (NB) Off-Ramp. This coordination has also included the scope of the proposed redevelopment project and the relative trip generation projections for the drop in site-related traffic converting from the existing office use to the proposed residential use. During these discussions,

MassDOT District 4 has not requested that the Applicant include the Concord Road ramp terminal intersections with either the US Route 3 NB and/or Southbound (SB) ramps signalized intersections, which are both under MassDOT's jurisdiction, within a reviewable study area as the redevelopment's TIPA.

Beyond the discussions with MassDOT, TEC and the Applicant have reviewed the recent traffic operational analyses documented in the Transportation Impact Assessment (TIA) prepared by Vanasse & Associates, Inc. (VAI)3 in May 2022 for the 161 Concord Road project, as approved by the Town. This TIA showed the Concord Road / US Route 3 NB Ramp terminal intersection operating at an acceptable level of service (LOS B or better) on all movements during both the weekday morning and weekday evening peak hours. This TIA also showed the Concord Road / US Route 3 SB Ramp terminal intersection operating at acceptable levels of service (LOS C or better) on all movements during both the weekday morning and weekday evening peak hours; except for the Concord Road SB left-turn movement which operated at LOS E during only the weekday morning peak hour. Whereas the subject project is projected to lower the historical trip generation permitted to/from the site and the 161 Concord Road project is now approved for even a lower proposed trip generation of January 2026, the general operations denoted above did not merit additional traffic operational evaluation.

K-H Response: The applicant has maintained coordination with MassDOT regarding the TIPA and permitting process, including the "indirect" Permit to Access State Highway. MassDOT has not requested the inclusion of the US Route 3 ramp terminal intersections within the study area, recognizing that the shift from office to residential use results in a net reduction in trip reduction. Furthermore, the previously approved 2022 TIA demonstrates that the intersection generally operates at acceptable LOS. Additional operational evaluation at the interchange is not required. Comment cleared.

- 2. K-H 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.

TEC Response: The language related to Concord Road geometry has been revised in the Revised TIPA to include additional specificity as noted.

K-H Response: Comment cleared.

- 3. K-H 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.

TEC Response: A description of Federal Street has been added to the Revised TIPA as noted. The Applicant has coordinated with the various property owners along Federal Street. Occupancy / vacancies for the other properties on Federal Street in July 2025 at the time of traffic volume counts were:

- #3 Federal Street - ±80% occupied or ±18,000 SF vacant
- #4 Federal Street – No longer serves as office use; but used as a religious assembly (Onnuri Mission Alliance) use with very minimal draw of traffic volumes during peak hour

conditions. This new use was under construction in July 2025 (39,888 SF). May not necessitate traffic volume projections based on limited church use.

- #5 Federal Street- ±100% occupied
- #8 Federal Street- ±100% occupied

K-H Response: Comment cleared.

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

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

TEC Response: The published MassDOT 2024 Weekday Seasonal and Axle Adjustment Factors worksheet has been included in the Revised TIPa under Attachment D. Note that other subsequent attachment designations may adjust as a result of this inclusion.

K-H Response: Comment cleared.

5. **K-H 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.*

TEC Response: The Existing Year and future year (No-Build and Build) traffic volume projections evaluated within the TIPa represent an above-average monthly condition. The following summary documents additional information to support this consideration and estimation:

- *May 2025 Public Record Data: Traffic volumes along Concord Road, east of Middlesex Turnpike, were collected in May 2025 (two-months prior to the TIPa traffic volumes while school was in session) and published by MassDOT on their Traffic Count Database System (TCDS) portal. The traffic counts had been collected on Tuesday, May 13, 2025 through Thursday, May 15, 2025 for Temporary Count Station #4066. The July 2025 Turning Movement Count (TMC) for the intersection of Concord Road / Middlesex Turnpike provided in the TIPa does include movement-specific data which directly overlaps the MassDOT location east of Middlesex Turnpike. This overlapping data includes the weekday time period from 6:00 AM to 7:00 PM (13-hours of comparable / overlapping time-of-day data). In comparing the May 2025 to July 2025 data for this 13-hour period, the following is noted:*
 - *Weekday Daily*
 - *May 2025 (MassDOT) 13-hour volume = 13,611 veh, 13,658 veh, & 13,858 veh (3-days of data)*

- July 2025 (TIPA) 13-hour volume = 14,172 veh
- Weekday Morning Peak Hour
 - May 2025 (MassDOT) AM peak hour = 1,238 veh, 1,259 veh, 1,324 veh (3-days of data)
 - July 2025 (TIPA) AM peak hour = 1,237 veh
- Weekday Evening Peak Hour:
 - May 2025 (MassDOT) PM peak hour = 1,266 veh, 1,281 veh, 1,284 veh (3-days of data)
 - July 2025 (TIPA) PM peak hour = 1,312 veh

The data for the location along Concord Road, east of Middlesex Turnpike, indicates that July conditions represent a comparable, if not higher, traffic volume condition than many school months, such as May. This is similar to the seasonal adjustment factor section originally noted in the TIPA. July 2025 traffic volumes were higher than May 2025 during the key 13-hour daytime block. July 2025 traffic volumes were comparable or slightly lower than May 2025 during the weekday morning peak hour; however, the minimal difference in traffic volume is not significant considering the fluctuations on the day-by-day basis of the May traffic volumes alone. July 2025 traffic volumes were higher than May 2025 during the weekday evening peak hour.

- September 2024 Public Record Data: Traffic volumes along Concord Road, east of Middlesex Turnpike, were collected in September 2024 (while school was in session) and published by MassDOT on their TCDS portal. The traffic counts had been collected on Tuesday, September 17, 2025 through Thursday, September 19, 2025 for Temporary Count Station #4066. Again, the July 2025 TMC for the intersection of Concord Road / Middlesex Turnpike provided in the TIPA does include movement-specific data which directly overlaps the MassDOT location east of Middlesex Turnpike. This overlapping data includes the weekday time period from 6:00 AM to 7:00 PM (13-hours of comparable / overlapping time-of-day data). In comparing the September 2024 to July 2025 data for this 13-hour period, the following is noted:
 - Weekday Daily
 - September 2024 (MassDOT) 13-hour volume = 13,334 veh, 13,442 veh, & 13,539 veh (3-days of data)
 - July 2025 (TIPA) 13-hour volume = 14,172 veh
 - Weekday Morning Peak Hour
 - September 2024 (MassDOT) AM peak hour = 1,271 veh, 1,273 veh, 1,280 veh (3-days of data)
 - July 2025 (TIPA) AM peak hour = 1,237 veh
 - Weekday Evening Peak Hour:
 - September 2024 (MassDOT) PM peak hour = 1,201 veh, 1,205 veh, 1,252 veh (3-days of data)
 - July 2025 (TIPA) PM peak hour = 1,312 veh

The data for the location along Concord Road, east of Middlesex Turnpike, indicates that July conditions represent a comparable, if not higher, traffic volume condition than many school months, such as September. This is similar to the seasonal adjustment factor section originally noted in the TIPA. July 2025 traffic volumes were higher than September 2024 during the key 13-hour daytime block. July 2025 traffic volumes were comparable or slightly lower than September 2024 during the weekday morning peak hour; however, the minimal difference in traffic volume is not significant considering the fluctuations on the day by-day basis of the May traffic volumes alone. July 2025 traffic volumes were higher than September 2024 during the weekday evening peak hour.

- The MassDOT 2024 Weekday Seasonal and Axle Adjustment Factors denote that urban minor arterial (U4-U7) roadways in July represented a 0.94 factor against average month conditions. This indicates that July is approximately 6% higher than average month conditions). Note that January represents a 1.04 factor, February represents a 1.02 factor, and March represents a 0.96 factor against average-month conditions. This indicates that traffic counts at this time would likely result in the collection of traffic volumes lower than those collected in July 2025.
- Note that any adjustment to seasonal variation in traffic volumes would only change traffic volumes passing along the mainline corridors within the study area and will not result in modifications of traffic volumes entering and/or existing Federal Street as traffic to/from this roadway, with no outlet, would be considered equivalent to a specific trip generation calculation. This represents the industry standard methodology for traffic volume adjustment on such roadways / driveways.

K-H Response: Comment cleared.

- 6. K-H 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.

TEC Response: This traffic volume textual discrepancy during the weekday morning peak hour has been addressed and the updated analysis worksheets are attached to the Revised TIPA's Attachment L.

K-H Response: Comment cleared.

- 7. K-H 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.

TEC Response: The weekday morning peak hour occurred from 7:30 to 8:30 AM and the weekday evening peak hour generally occurred from 4:30 to 5:30 PM at the intersection of Federal Street / Concord Road and 4:45 to 5:45 PM at the intersection of Concord Road / Middlesex Turnpike. Text denoting this has been included in the Revised TIPA.

K-H Response: Comment cleared.

- 8. K-H 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.

TEC Response: The signal timing / phasing at the intersection of Concord Road / Middlesex Turnpike has been projected in the TIPA based on modifications to the traffic signal proposed by others as off-site mitigation for the full build-out of the development located at 161 Concord Road. TEC utilized the TIA prepared by VAI4 in May 2022 for the proposed traffic signal timing / phasing parameters in both the No-Build and Build conditions. There is currently no physical design plan denoting these traffic signal timing / phasing changes. Note that these modifications have been

included within the TIPA per direction of the Town where the 161 Concord Road project is included as a Specific Development by Others.

K-H Response: Please provide a copy of the correspondence with the Town allowing this development to use modified signal timings. Additionally, please include the original copy of the approved TIPA detailing the proposed signal timing adjustments.

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.

9. K-H 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.

TEC Response: TEC’s opinion is that post-COVID conditions more accurately reflect today’s operational and safety conditions based on the change in “new normal” traffic flow conditions, updates to vehicle fleets, and driver tendencies. Regardless, TEC did a cursory examination of the crash history defined by Kimley-Horn for the 2013 – 2019 period prior to COVID. During this timeframe, the intersection of Concord Road / Federal Street has experienced twenty (20) crashes (confirming Kimley-Horn’s Comment), or an average of 2.86 crashes per year on average. This level of crashes over this time period would result in a crash rate (using the 2025 traffic volumes) of 0.30 crashes per million entering vehicles (MEV) which is considered less than the current statewide (0.57 per MEV) / district-wide (0.57 per MEV) average for unsignalized intersections and likely comparable past averages. With the limited crash history and the low crash rate, the historical intersection conditions do not specifically note a crash trend.

K-H Response: While we acknowledge TEC’s opinion regarding the ‘new normal’ of post-COVID traffic patterns, we do not agree that data from a period of significantly reduced building occupancy provides a sufficiently conservative baseline. TEC’s reference to a ‘cursory examination’ of the 2013-2019 period is noted; however, to ensure the public record reflects a safety evaluation, we request that the formal MassDOT Crash Rate Worksheets for those historical years be provided for historical context.

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.

10. K-H 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.*

TEC Response: Based on past direction from MassDOT on similar studies, TEC has utilized growth rate data directly from various Regional Planning Agencies and/or the MassDOT Office of Transportation Planning (OTP). For the TIPA, TEC utilized data directly through coordination with the Northern Middlesex Council of Governments (NMCOG). This methodology resulted in a 0.85% annual growth rate compounded year-over-year. Note that MassDOT does not have recent published statewide and/or functional classification specific annual growth data post-2019. TEC generally did not utilize location-specific MassDOT TCDS data for this TIPA as there is no comparable MassDOT Permanent Count Station along an urban minor arterial nearby. In the presence of such NMCOG data, TEC relied on these more location-focused growth rates, as they provide a more accurate representation of local conditions.

K-H Response: While we maintain that historical, location specific TCDS counts provide a more accurate growth rate, we acknowledge the use of NMCOG-certified growth data. Based on this clarification, the growth rate can remain as assumed. Comment cleared.

11. K-H 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.*

TEC Response: Please refer to the response to KM Comment #3. Other buildings on Federal Street are mostly occupied with only ±18,000 SF vacant at #3 Federal Street and 39,888 SF at #4 Federal Street in July 2025. Note that the #4 Federal Street building had recently changed its land use to a religious assembly (Onnuri Mission Alliance) with very minimal new traffic draw of traffic volumes during peak hour conditions. This new use was under construction in July 2025 (39,888 SF) but is not expected to return to the previous office use.

KH Response: K-H concurs with TEC's findings regarding the land use within the Federal Street cul-de-sac. We acknowledge the specific vacancy data provided. Since this new use typically generates peak traffic outside traditional weekday commuting hours, we agree it will not negatively impact weekday morning and evening peak hours. Comment cleared.

12. K-H 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."*

TEC Response: TEC coordinated with the Town on Wednesday, January 21, 2025 as to the status of the three (3) approved projects identified as Specific Developments by Others in the TIPA. The following summarizes this coordination:

- 161 Concord Road – The project recently resubmitted plans and documentation to the Town for a site plan modification to reduce the overall square footage to 147,400 square feet (SF) and changed the land use to a flex / light industrial use. A Transportation Impact Evaluation was prepared by VAI5 in September 2025 was submitted to the Town which documented a projected reduction in proposed site generated traffic. The application was approved in January 2026. All Conditions of Approval from the original 2022/2023 approval are still applicable including traffic signal timing / phasing modifications to the intersection of Concord Road / Middlesex Turnpike. Where the off-site mitigation is still applicable and the traffic volumes have dropped significantly, TEC has not revised the TIPA with lower traffic volumes with conservatism. There is currently no update as to the expectation of construction.
- 191 Concord Road – The development team currently has no funding for the project and therefore have no current date of opening. Since Town approval, no permits have been issued as to the construction on this site.
- 300 Concord Road – Since Town approval, no permits have been issued as to the construction on this site. Discussions have occurred about the potential to change the land use in the area to retail / commercial activities; however, no site plan applications for this have been filed. The Select pages showing the reduction in traffic from the Traffic Assessment for 300 Concord Road prepared by McMahon and Associates⁶ is added under Attachment G.

KH Response: Relevant information has been provided. Comment cleared.

13. K-H 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.*

TEC Response: The methodology utilized in the TIPA shows the full reoccupancy of both #1 and #2 Federal Street as general office uses during the No-Build condition as these existing buildings could be reoccupied with no permitting in a relatively short timeframe. These trip generations projections were not included in the Build condition. The Build condition only includes trip generation from the #1 and #2 Federal Street parcels that are generated as the proposed residential uses.

Assuming full reoccupancy of ±18,000 SF vacant office space at #3 Federal Street, this space may generate up to 27 additional weekday morning peak hour trips (24 entering and 3 exiting) and 26 additional weekday evening peak hour trips (4 entering and 22 exiting). This level of additional traffic is generally negligible and would not significantly change the results of the capacity and queue analysis documented in the original TIPA. Additionally, modifications to the

capacity and queue analysis would equally affect both the No-Build and Build conditions and therefore will not change the considerations of the proposed redevelopment. Please note that any additional traffic along Federal Street from this reoccupancy, or a full 57,888 SF reoccupancy (with office at #4 Federal Street as opposed to the existing religious assembly use) still does not trigger thresholds for traffic signal warrants at the intersection of Concord Road / Federal Street.

KH Response: While K-H acknowledges TEC's assertion that the additional trips from #3 and #4 Federal Street are statistically minimal, we maintain that their formal inclusion in the capacity, queuing, and signal warrant would have been appropriate. Our primary concern is the vehicle queuing extending back along Federal Street from the Concord Road at the Federal Street intersection into the proposed site driveway. Even a small increase in trips from neighboring parcels can exacerbate queues during peak hours. However, considering TEC's response above and conclusion that these volumes would not trigger a warrant even under a full occupancy office scenario, we accept the response provided.

It is unclear whether these trips were added, at what point they were added, how many, etc. Please clarify this and make sure it is well documented 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.

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

TEC Response: An approximate layout of the proposed Yankee Doodle Bike Path has been added to Figure 1 of the TIPA. A general plan sheet for the Yankee Doodle Bike Path has been included in Attachment G of the TIPA for reference.

K-H Response: Schematic of the planned trail has been provided as part of the report. Comment cleared.

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.

15. K-H 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.*

TEC Response: Figure I-1 (renamed to J-1) has been updated to be consistent with Table 6 and is provided in Attachment J of the Revised TIPA.

K-H Response: Comment not addressed. The traffic from Concord south shows as 65% in Figure J-1, while the trip distribution summary shows this distribution as 70%. Similar discrepancies exist for traffic coming from/to Middlesex Turnpike to the east. Please revise.

16. K-H 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.

TEC Response: The projected traffic volumes for the site driveways have been added to the traffic networks, synchro analyses, and LOS tables within the Revised TIPa.

K-H Response: Study has been updated to include the driveways. Comment cleared.

- 17. K-H 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?

TEC Response: The TIPa included two (2) separate trip distribution gravity models based on US Census Journey-to-Work “OnTheMap” data. This includes an office specific distribution utilized for projecting the reoccupancy of the office space for the No-Build condition and a residential specific trip distribution utilized for projecting the proposed redevelopment in the Build condition.

K-H Response: Comment not addressed. Please include a figure and a description of the distributions assumed when evaluating the reoccupation of the office park in the report. It is difficult to arrive at the Build-Out conditions without all the relevant information.

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.

- 18. K-H Comment 18:** This proposed and existing development’s land use code (LUC) is appropriate.

- 19. K-H 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.

TEC Response: Comment acknowledged. The weekday daily net difference presented in Table 5 has been revised in the Revised TIPa to reflect 18 fewer daily trips compared to the existing office building.

K-H Response: Comment cleared.

- 20. K-H 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.

TEC Response: Comment acknowledged. Comment acknowledged. The grammatical error in the footnote under Table 5 has been revised in the Revised TIPa

K-H Response: Comment cleared.

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.

21. K-H Comment 21: *The 442 parking spaces are expected to be adequate for this proposed development.*

22. K-H 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.*

TEC Response: A parking schedule with the proposed bedroom mix has been included in the Revised TIP. A copy of the Town of Billerica's bylaw for off-street parking has been included in Attachment M of the Revised TIP.

K-H Response: Comment cleared.

QUEUING

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

23. K-H 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.*

TEC Response: Comment acknowledged. This has been summarized in the Revised TIP and the Applicant has added 'Do Not Block the Intersection' measures along Federal Street at the driveway(s) location to the revised site plan.

K-H Response: Applicant is responsible for the installation of a 'Do Not Block the Intersection' measure at Federal Street. Comment cleared.

24. K-H 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.*

TEC Response: Comment acknowledged. Turn bay lengths are added to the Revised TIP.

K-H Response: Turn bay lengths have been provided as part of the report. It should be noted that the queue at the westbound left movement at Middlesex Turnpike at Concord Road exceeds the turn bay at every condition. Is there any mitigation that was considered here to alleviate the impact?

- 25. K-H 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.*

TEC Response: *For signalized intersections, it is industry standard practice to report both the 50th-percentile and 95th-percentile queue lengths. For the signalized intersection of Concord Road / Middlesex Turnpike, both queue metrics were reported. The same footnote was added to both tables and therefore did not accurately reflect this and will be updated accordingly*

K-H Response: Comment cleared.

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

TEC Response: *Capacity and queue analysis for the site driveways are performed and added to the Revised TIPA.*

K-H Response: Comment cleared.

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.

- 27. K-H 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.*

TEC Response: *The sight distance evaluation was performed by TEC, Inc. The sight distance triangles have been added to the revised plans to illustrate the areas. Please also note that each plan is accompanied by a note that requires "Signs, landscaping and other features located within sight triangle areas shall be designed, installed, and maintained to not exceed 2.5 feet in height. Snow accumulation (windrows) located within sight triangle areas that exceed 2.5 feet in height or that would otherwise inhibit sight lines shall be promptly removed. Refer to Sight Triangle Plans for additional information." These are shown on the Layout and Materials Plans*

K-H Response: Comment cleared. In the future, the sight line triangles should be included as part of an attachment or a figure within the TIPA.

OPERATIONS ANALYSIS

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

- 28. K-H 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.

TEC Response: TEC notes that the conditions pre-COVID are not expected to be the conditions post-COVID including the proposed development. Actually, the redevelopment of #1 Federal Street and #2 Federal Street will directly complement the other land used to the east by balancing traffic volumes whereas residential and office uses are generally the direct opposite in the direction of trips.

The “perception” of conditions in the past pre-COVID is generally ‘moot’. For further comment response as to responsibility for funding future study and/or improvements, please refer to the response to KH Comment #43.

K-H Response: Comment cleared.

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.

29. K-H 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.*

TEC Response: N/A – this comment is unrelated to the TIPPA and/or site plan and should be discussed separate from the transportation peer review. Please note that the Applicant for this site plan review is not the property owner.

K-H Response: Comment cleared, Kimley-Horn agrees with the responses, and maintains that this discussion should take place.

30. K-H 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.

TEC Response: The Project proposes to provide a direct connection from the property at #2 Federal Street to the to-be-built Yankee Doodle Bike Path, which connects to the signalized intersection of Concord Road / Middlesex Turnpike and includes an exclusive pedestrian phase to cross Concord Road and the crosswalk on the SB side of Concord Road. In addition, the Applicant will provide a painted crosswalk with appropriate traffic signs across Federal Street to allow residents of #1 Federal Street to access the Yankee Doodle Bike Path via the internal sidewalk network. There is no requirement for a sidewalk along Concord Road in the Town Bylaws or Zoning Ordinance. There is already a sidewalk on the SB side of Concord Road providing pedestrian access to Billerica Center and the west side of US Route 3 and as provided on the Property residents can safely get from #1 & #2 Federal Street to this sidewalk via the Bike Path and crosswalk at the intersection of Concord Road / Middlesex Turnpike. Furthermore, a sidewalk along the NB side of Concord Road for the 1,200 feet of site frontage is most likely not feasible based on the following challenges:

- The construction of sidewalk north of Federal Street would require significant impact to wetland resource areas including the need for retaining walls, relocated guardrail, and/or grading impacts into the delineated wetland. The Applicant considers this an unnecessary impact to environmental resource areas given the physical connection to the Yankee Doodle Bike Path already provided on-site.
- In the absence of a traffic signal, the Applicant and TEC do not believe a crosswalk adjacent to Federal Street across four (4) higher speed arterial lanes of Concord Road would increase the safety of pedestrians given the close-by signalized crossing at Middlesex Turnpike which sits only ±400- feet from the physical connection to the Yankee Doodle Bike Path on-site. For further comment response as to traffic signal warranting conditions, please refer to the response to KM Comment #43

A&M Response: 2 Federal Street has no existing sidewalk along its frontage, 1 Federal Street does have an existing sidewalk along its frontage on Federal Street that ends with an ADA ramp at the intersection of Concord Road, and there is an existing sidewalk on the opposite or north side of Concord Road. We note there are no existing crosswalks on Federal Street or across Concord Road. The topography along the Concord Road does not provide the opportunity for a sidewalk along this frontage without encroaching within the buffer zone and bordering vegetated wetland that is onsite at 2 Federal Street. The proposed site plans create connectivity between the two residential structures (across Federal Street) and to the proposed Yankee Doodle Bike Path which in turn provides access to Concord Road.

K-H Response: Comment not fully addressed. Kimley-Horn understands the impacts that frontage sidewalk would have along Concord Road, however, Federal Street does not have the same environmental impacts that Concord Road does. It is our recommendation that a sidewalk be installed along Federal Street.

Regarding the internal sidewalk connecting the site to the planned bike path, the Applicant is expected to grant a public access easement through the property at #2 Federal Street. This

easement would provide pedestrian and bicycle access from Federal Street to the bike path for public use. Please confirm that this sidewalk will be available for public use. Additionally, please highlight the pedestrian amenities and how people can walk safely from various origins and destinations.

31. K-H 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.

TEC Response: Consideration acknowledged.

K-H Response: Formal coordination with the TMA should be established as a condition of the TDM plan to ensure the proposed transit-related mitigation is effectively implemented.

32. K-H 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.

TEC Response: Construction of the project and sidewalk to the Yankee Doodle Bike Path are expected to be complete by Summer of 2029. #4 & #8 Federal Street could have their own direct access to the Yankee Doodle Bike Path (given similar easement through their properties). The Applicant is open to having discussions with #3 & #5 Federal Street to see if their daytime employees would use the bike path.

A&M Response: The site development drawings have been revised to indicate that construction of the bike path is "by others". Access for the residents of the project will be adjacent to the detached garage as shown on the plans. The connectivity will be coordinated between contractors as the project proceeds.

K-H Response: Comment not fully addressed. Sidewalk connection from the site is shown more clearly in site plan (C-105), and labeling has been applied.

Regarding the internal sidewalk connecting the site to the planned bike path, the Applicant is expected to grant a full public access easement through the property at #2 Federal Street. This easement would provide pedestrian and bicycle access from Federal Street to the bike path for public use. Please confirm that this sidewalk would be available for public use, not just limited to #3 and #5 Federal Street.

33. K-H 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.

TEC Response: This improvement was added to the On-Site Pedestrian Accommodations section in revised TIP, please refer to the response to KM Comment #30 for site plan related modifications.

K-H Response: Comment cleared.

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.

34. K-H 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.*

TEC Response: TEC disagrees with this assessment. A Build Mitigation condition is typical practice for optimization of traffic signal timing / phasing when directed as mitigation for the subject project under review. The No-Build and Build conditions include traffic signal timing / phasing that is proposed as off-site mitigation for the 161 Concord Road project (see response to KH Comment #8). Whereas the 161 Concord Road project has been approved (including recent site plan modification approvals in January 2026) and includes the modifications to traffic signal timings / phasing at the intersection of Concord Road / Middlesex Turnpike, the proposed mitigation, as well as the traffic volumes projections, were included in both the No-Build and Build conditions of the TIPA.

K-H Response: Because, according to Comment 8, these modifications have been included within the TIPA per direction of the Town, no action is necessary. Comment cleared.

35. K-H Comment 35: *Provide information on the existing signal timing setting prepared by MassDOT.*

TEC Response: Please refer to the response to KH Comment #8.

K-H Response: Because, according to Comment 8, these modifications have been included within the TIPA per direction of the Town, no action is necessary. Comment cleared.

36. K-H 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.*

TEC Response: The traffic signal at the intersection of Concord Road / Middlesex Turnpike is not coordinated with the US Route 3 ramp terminal intersections. Please note that coordination is not to be installed as part of the 161 Concord Road project off-site mitigation as approved by the Town. TEC does not believe that the inclusion of coordination along this stretch of Concord Road may improve operations as coordination traditionally comes with MAX green time being satisfied along the Concord Road mainline to “keep the clock / cycle length consistent”. This may limit the potential for extra green time to the side-street approaches and thereby not improve side-street operations. A traffic signal is not warranted at the intersection of Concord Road / Federal Street as noted in the TIPA.

K-H Response: Comment cleared.

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.

37. K-H 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.*

TEC Response: Please refer to the response to KM Comment #23.

K-H Response: Comment cleared.

38. K-H 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.*

TEC Response: The TIPA denotes that both #1 Federal Street and #2 Federal Street share cross-access capabilities with neighboring #3 Federal Street and #4 Federal Street, respectively. It is the intent of the project to eliminate the cross-access capabilities at #1 Federal Street (with #3 Federal Street) while maintaining the existing condition on the #2 Federal Street parcel. The existing cross-access capabilities are documented through the Middlesex County North Registry of Deeds as a "25-FT All Purpose Easement" through the most recent plans for #3 Federal Street (Book 144, Page 43) and for #4 Federal Street (Book 144, Page 26).

A&M Response: The easterly driveway is shared under an easement recorded at the Registry of Deeds at Book 6854 Page 267 as attached hereto. The easement grants the rights for vehicular and pedestrian passage as well as utility installation and maintenance. It does not incorporate any shared parking requirements between the properties. As proposed, the development at 2 Federal Street is provided with 299 spaces in conformance with zoning with no reliance on any shared parking. The easement legal references have been added to the revised Existing Conditions plan as requested.

K-H Response: The attachment, demonstrating the recorded easement, is missing. Please include it as part of the attachment of the report.

CONCLUSIONS/GENERAL COMMENTS

39. K-H 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.*

TEC Response: *There is no requirement for a sidewalk along Concord Road in the Town Bylaws or Zoning Ordinance . Please refer to the response to KM Comment #30.*

K-H Response: Comment not fully addressed. Kimley-Horn understands the impacts that frontage sidewalk would have along Concord Road, however, Federal Street does not have the same environmental impacts that Concord Road does. It is our recommendation that sidewalk be installed along Federal Street.

40. K-H 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.*

TEC Response: *The Site Plan package may be modified following submission of the Revised TIPAs. As a result, TEC typically does not include Site Plan sheets, unless specific to a traffic related item, within traffic assessment documents in order to avoid potential confusion with future revisions that may be publicly posted. Note the site plan, as revised, is included as part of the overall site plan review submission package.*

K-H Response: Comment not addressed. K-H acknowledges TEC's concern regarding version control. However, for the convenience of peer reviewers, an overall site plan should be included in the TIPAs attachment. To address the risk of 'potential confusion' a footnote or watermark may be added to the sheet. Unless the site undergoes a major redesign that fundamentally changes trip distribution or access points, the TIPAs remains a record of the project's impact at the time of study.

41. K-H 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).*

TEC Response: *Please refer to the response to KM Comment #16.*

K-H Response: *Comment cleared. Site driveways have been included as part of the report.*

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

TEC Response: *An Executive Summary section has been added to the Revised TIPAs for clarity.*

K-H Response: *Comment cleared, please provide a Table of Contents in future TIPAs, it is difficult to navigate the report and the attachment without one.*

43. K-H 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.*

TEC Response: Please refer to the response to KM Comment #13. Upon revisions to the traffic signal warrant calculations with additional reoccupancy by others along Federal Street (#3 & #4 Federal Street all as office even though #4 Federal Street is currently occupied by religious assembly use), a traffic signal is still not warranted as part of the project. In order to meet this warrant condition, with the reoccupancy by others noted above, the industry standard Institute of Transportation Engineers (ITE) model conditions would require up to seventy-seven (77) additional multi-family residential units on Federal Street, or a 30% increase in the proposed uses on-site. Whereas proposed traffic levels are not generally close to warranting thresholds identified in the Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD), conditions to meet warrants are likely to be related to the other uses, reoccupancies, and/or redevelopment of parcels along Federal Street. Given that signal warrants are not met under existing (including potential re-occupancy of 1&2 Federal) or the future conditions under the industry standard ITE model conditions attributable to the Project, any future post-occupancy traffic studies or future signal installation obligations would be unrelated to demonstrated impacts from this project and therefore not warranted.

K-H Response: It is unclear where the re-occupancy takes place in the TIPa, is this only being considered for the signal warrant? Show the appropriate trip generation table, distribution, trips, and build out considering the reoccupancy of the adjacent office space. However, based on the clarification regarding the additional reoccupancy, a traffic signal does not meet the warrants.

44. K-H 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.*

TEC Response: Comment acknowledged. This language is included in the On-Site Pedestrian Accommodations section in Revised TIPa. The Town's Standard Detail has been added to the Site Plans and all necessary pavement markings, traffic signs, for the crosswalk are also denoted on the Site Plans.

K-H Response: Comment cleared.

45. K-H 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.