

Kathleen Bradley-Colwell
Planning Division Director
Department of Economic and Community Development
City of Methuen
41 Pleasant Street, Suite 217
Methuen, MA 01844

August 28, 2024

Ref. T0222.00.01

Re: Murphy's Farm – Dracut, Massachusetts
Traffic Engineering Peer Review

Dear Ms. Bradley-Colwell:

On behalf of the City of Methuen, TEC, Inc. (TEC) has reviewed documents as part of the traffic engineering peer review for the proposed Murphy's Farm development in Dracut, Massachusetts ("the Project"). The Project consists of constructing a 268-unit multifamily residential development at 231 Wheeler Street. The residential buildings will consist of one-, two- and three-bedroom units. Access/egress to the site will be provided via the Rinzee Road / Wheeler Street intersection in Methuen and the Wilshire Circle / Wheeler Road intersections in Dracut. A new roadway, proposed between existing cul-de-sacs on Poppy Lane and Elizabeth Drive (both in Dracut), will serve as the Applicant's proposed access connection.

The following materials were considered as part of our review:

- *Transportation Impact Assessment, Murphy's Farm - Dracut, MA*, prepared by Vanasse & Associates, Inc. (VAI), dated October 2023 and revised July 2024.
- *Draft Layout, Grading, and Utilities Plan – Murphy's Farm - Dracut, MA*, prepared by Civil Design Consultants, Inc., undated.

TEC completed a review of these documents for the City of Methuen and provides transportation-related comments below.

1. The *Transportation Impact Assessment* (TIA) included the following intersections within the study area:
 - North Lowell Road (Route 113) at Wheeler Street (MassDOT Jurisdiction)
 - Wheeler Street at Wheeler Road
 - Wheeler Street at Rinzee Road
 - Lowell Boulevard (Route 110) at Wheeler Street (MassDOT Jurisdiction)
 - Wheeler Road at Wilshire Circle and Paddock Lane
 - Wheeler Road at Wilshire Circle
 - Wheeler Road at Parker Road
 - Broadway (Route 113) at Wheeler Road / Jones Avenue (MassDOT Jurisdiction)

TEC concurs with this study area and believes it is appropriate for the scale of the project.
No response required.

2. Automatic Traffic Recorder (ATR) counts were conducted on Wheeler Street and Wheeler Road on March 7 and 8, 2023. Turning Movement Counts (TMCs) were conducted at all study area intersections, except Wheeler Road/Parker Road and Route 113/Wheeler Road/Jones Avenue, on March 7, 2023 between the hours of 7:00 AM and 9:00 AM for the weekday morning peak period and between the hours of 4:00 PM and 6:00 PM for the weekday evening peak period. In response to local comments, the study area was expanded to include the aforementioned intersections and TMCs were subsequently conducted for them on April 7, 2024. *No response required.*
3. VAI reviewed traffic volumes for weekday seasonal adjustments based on historical traffic-volume data from Massachusetts Department of Transportation (MassDOT). Traffic counts for March and April reflect above average conditions, so they were not seasonally adjusted. TEC concurs with this methodology. *No response required.*
4. Contrary to the description for the intersection of Route 110 / Wheeler Street within the TIA, TEC notes that there is only one sidewalk provided on the north side of Route 110 at the intersection of Wheeler Street, rather than on both sides of Route 110 as written. This should be confirmed and corrected accordingly in the TIA if it is submitted to MassDOT for any permitting.
5. Public transportation consists of Merrimack Valley Regional Transit Authority (MVRTA) bus service between Lawrence and Lowell along Route 110 on Bus Route 24. There are no services currently available at the project site. The closest regular stop is located at the Casa Blanca restaurant, about 1.5 miles southeast of the site. The Route 24 bus also operates in a "flag stop" where riders along the route in the area of Wheeler Street can signal the bus driver to stop where it is safe to do so. The MVRTA also provides Dial-a-Ride paratransit service outside of the fixed route to eligible persons with physical, cognitive or mental disabilities. *No response required.*
6. In conjunction with the ATR counts noted in Comment #3, spot speed measurements were also conducted. Measured 85th percentile speeds were determined to be 30-32 MPH on Wheeler Street (south of Rinzee Road), 34-38 MPH on Wheeler Road near Wilshire Circle, and 16 MPH on Wheeler Street north of Wheeler Road. The TIA states that the posted speed limit at all locations is 30 MPH. However, TEC notes that speed limits signs are not posted on Wheeler Street north of Wheeler Road. *No response required.*
7. VAI evaluated MassDOT's crash records for the years 2015-2019 and the data is shown in Table 4 of the TIA. Six of the eight (8) study area intersections had at least one crash over the 5-year period. Route 110 at Wheeler Street and Wheeler Road at Wilshire Circle and Paddock Lane had crash rates above the MassDOT Statewide and District 4 averages, both 0.57 crashes per million entering vehicles (MEV) for unsignalized intersections. It should be noted, however, the latter intersection experienced only two crashes in the 5-year period. Also, in a subsequent review of data from 2016-2020 (contained in the Appendix), the former intersection had a crash rate below the Statewide and District averages. Regardless, the TIA describes specific off-site mitigation measures to be performed by the Applicant to reduce these crash rates or directly address safety at both locations.
8. To obtain future year volumes (2031), VAI adjusted the March 2023 and April 2024 counts with a growth rate of 1% per year compounded, based on area growth between 2009 and 2019. This growth rate accounts for background traffic as well as for specific developments

- by others (Berube Farms, Wheeler Road, Dracut). TEC concurs with this adjustment. *No response required.*
9. The project's trip generation calculations were generated based on the industry standard Institute of Transportation Engineers (ITE) publication, *Trip Generation, 11th Edition* for Land Use Code (LUC) 215 *Single-family Attached Housing*. TEC concurs with this methodology. *No response required.*
 10. The trip distribution provided in the TIA appears to match the Journey to Work US Census data provided in the Appendix and has been reasonably estimated. *No response required.*
 11. The Applicant provided a table of peak hour traffic volume increases (Table 6 in the TIA). While many of the percentage increases in traffic are between 1.0% and 4.3%, there are others on Wheeler Street and Wheeler Road that are as high as 50.7%. In addition, the residential access points for the site (Rinzee Road and Wilshire Circle) have substantially higher increases ranging between 258.3% and 877.8%. While there are no apparent level of service issues or high motorist delays following the introduction of new trips from the Project, the change in the volume of traffic on the neighborhood streets will likely be obvious to nearby residents, but one that likely cannot be reasonably mitigated.
 12. VAI analyzed the signalized and unsignalized intersections using Synchro 12TM software. The methodology utilized was discussed in the TIA and appears compatible with MassDOT guidelines and is appropriate. For signalized and unsignalized intersections, the *Highway Capacity Manual (HCM) 7th Edition* was used. TEC concurs with the use of these analysis tools. *No response required.*
 13. The analyses for the intersection of Route 113 at Wheeler Road / Jones Avenue shows levels of service (LOS) B or better for all movements. *No response required.*
 14. For the unsignalized analyses, the side street movements at Route 113/Wheeler Street and Route 110/Wheeler Street intersections will operate at LOS D, E, or F, depending on the condition analyzed. A LOS of "D" or better is generally defined as "acceptable" operating conditions. Off-site mitigation has been described in the TIA to improve the LOS E and F conditions noted.
 15. A Traffic Signal Warrant Analysis (TSWA) was conducted for 2024 Existing, 2024 Build, and 2031 Build conditions at the intersection of Route 113 / Wheeler Street with results shown in Table 12. A design speed of ≤ 40 MPH was used. Traffic volumes from April 2024 were not adjusted downward to reflect average month conditions, consistent with MassDOT guidelines for counts conducted in a year that Weekday Seasonal and Axle Correction Factors are not published. Since 68% of the traffic exiting Wheeler Street turns right, a 20% reduction of right turns was applied to 2024 Build and 2031 Build conditions. The TIA indicates that the intersection meets Traffic Signal Warrants 1, 2 and 3 under some of the conditions analyzed. However, as the intersection is under MassDOT control, MassDOT typically requires that Warrant 1 (Eight-Hour Vehicle Warrant) be met to consider traffic signal installation at State Highway intersections. Warrant 1 is not met under 2024 Existing conditions, nor under 2024 Build or 2031 Build conditions with the 20% reduction in right turns applied. As such, the Applicant is not proposing signal installation. TEC generally concurs with the analysis parameters and results. However, the Applicant should provide supporting documentation justifying the 20% traffic volume reduction in a response to comments.

16. The Applicant proposes a “fair share” cost contribution toward the proposed mitigation at the intersection of Route 113 / Wheeler Street. However, TEC suggests the Applicant be required to fund, design and construct the improvements, if the City concurs with implementation since this is not a currently programmed municipal infrastructure project. The TIA did not include a sight line assessment for this intersection and there are apparent sight line deficiencies that should be more thoroughly vetted; this may require extensive clearing to meet minimum safety criteria. Any improvements at this location may require both MassDOT and City approval.
17. A traffic signal warrant analysis should also be conducted for the intersection of Route 110 / Wheeler Street. Site-related traffic volumes are projected to increase by only 10% to 20%, but the level of service is projected to decrease from “D” to “E”.
18. The Applicant proposes to restripe the stop line and crosswalk at the intersection of Route 110 / Wheeler Street. TEC agrees with this proposal. However, as this intersection had a crash rate higher than the MassDOT averages, TEC also recommends the City requests that the Applicant approach MassDOT regarding other intersection warning signs on Route 110, providing a reflectorized red stripe on the stop sign post, and/or providing LED warning lights around the stop sign border as additional safety measures.
19. The TIA states that Wheeler Street has two lanes separated by a double-yellow centerline (DYCL). However, the centerline pavement markings are quite faded in several sections. The markings should be reapplied while other striping work occurs as noted in Comment 18.
20. The Applicant has provided stopping sight distance (SSD) and intersection sight distance (ISD) measurements for the major site access points. Of particular interest in the City of Methuen are the intersections of Wheeler Street at Rinzee Road and Wheeler Street at Wheeler Road. The results are shown in Table 13 of the TIA and have been compared to recommended values obtained from A Policy on Geometric Design of Highways and Streets, 7th Edition, American Association of State Highway and Transportation Officials (AASHTO), 2018. The measured distances have been shown in the TIA to exceed these values, except for the measured ISD for vehicles looking north from Wheeler Road to Wheeler Street (110 feet). However, Table 13 contains a note stating that the ISD can be improved to meet the minimum SSD by trimming/removal of trees and regrading of the embankment along the west side of Wheeler Road and Wheeler Street. It should be noted that this would involve work on private property and may only marginally improve sight lines. VAI should perform a multi-way stop warrant analysis for this intersection, especially since 20% to 30% of the site-related traffic is projected to pass through it. If warranted based on traffic volumes or sight distance considerations, a multi-way stop could be a safer and more cost-effective long-term solution when compared to the Applicant's proposed mitigation.
21. The sight line triangles should be more closely reviewed at the intersection of Wheeler Street / Rinzee Road. The exhibits in the TIA depict the required sight distances rather than the measured sight distances. There are existing shrubs/bushes on the southwest corner of the intersection that appears to impede the sight distance to the south. It is not clear whether the plantings are located within the right-of-way or on private property. The Applicant may need to work with the homeowner to relocate the plantings to maximize the sight lines closer to AASHTO's ISD recommendations.

22. The Applicant has defined Transportation Demand Management (TDM) to be utilized on the site, including:

- The proponent will become a member of the Merrimack Valley Transportation Management Association (MVTMA).
- Assign a transportation coordinator for the project.
- Facilitate a rideshare matching program for residents.
- Provide a “welcome packet” to residents detailing public transportation services, bicycle and walking alternatives and other commuter options.
- Provide pedestrian accommodations on site to encourage walking.
- Consider providing electric vehicle charging stations.
- Provide short-term parking or loading zone for carshare and delivery services..
- Provide secure bicycle parking on-site.

TEC concurs with these TDM measures. *No response required.*

Please do not hesitate to contact me if you have any questions concerning this peer review at 978-794-1792. Thank you for your consideration.

Sincerely,
TEC, Inc.
“*The Engineering Corporation*”



Kevin R. Dandrade, PE, PTOE
Principal / Practice Area Leader for Transportation Planning