

Kathleen Bradley-Colwell  
Planning Division Director  
City of Methuen  
41 Pleasant Street  
Methuen, MA 01844

October 5, 2023

Ref. T0222.95

Re: Proposed Aroma Joe's – 79 Haverhill Street  
Civil & Traffic Engineering Peer Review #1

Dear Members of the Board:

On behalf of the City of Methuen, TEC, Inc. (TEC) has reviewed documents as part of the traffic and civil engineering peer review for a proposed Aroma Joe's Development at 79 Haverhill Street in Methuen, Massachusetts ("the Project"). The Project consists of removing the existing parking lot and constructing a 782 square feet (sf) Aroma Joe's coffee shop with a single drive through window and no indoor seating. The proposed project proposal includes an existing full-access driveway onto Haverhill Street (Route 110) that is generally aligned with Madison Street and a new exit-only driveway approximately 100 feet west of Madison Street. The following documents were considered as part of our review:

- *Transportation Impact and Access Study – Proposed Aroma Joe's- 79 Haverhill Street*, Methuen, Massachusetts; prepared by Bayside Engineering, dated August 1, 2023; and
- *"Application For Site Plan Approval"* prepared by Andover Consultants, dated June 28, 2023; and
- *"Application For Special Permit"* prepared by Andover Consultants, dated August 24, 2023; and
- *"Proposed Site Plan"* prepared by Andover Consultants, dated July 31, 2023; and
- *Stormwater Report*, prepared by Andover Consultants, Inc, dated July 31, 2023.

TEC completed a review of the Applicant's documents on behalf of the City of Methuen and provides the following transportation-related comments that we compiled during our review.

### **Traffic Impact and Access Study Review**

1. The Traffic Impact and Access Study (TIAS) included the following intersections within the study area:
  - Haverhill Street at Strathmore Road and Existing Site Driveway
  - Haverhill Street at Madison Street and Existing Site Driveway
  - Haverhill Street at Exit-Only Driveway

Based on the scale of the planned redevelopment and the expected trip generation, TEC concurs with the Applicant's study area. *No response required.*

2. Traffic volume counts, including Turning Movement Counts (TMCs) and Automatic Traffic Recorder (ATR) data, were conducted at the study area roadway and intersections in June 2023 when schools were in session. The recorded volumes for this period was found to

exceed the average monthly conditions based on historical traffic-volume data obtained from MassDOT continuous count station No. 5093 2014-2019, and therefore no seasonal adjustment factors were applied. The Applicant's engineer obtained non-consecutive months to estimate seasonal adjustment factors. TEC concurs that month of June generally represents an above-average condition, justifying the decision not to apply the seasonal adjustment factor. *No response required.*

3. The weekday morning and weekday evening peak commuter hours were studied to determine the project's overall effect on the roadway. TEC concurs that these selected time periods are appropriate as the peak hours of coffee shop facilities typically overlap with the peak hours of the adjacent street system, particularly the morning peak hour. *No response required.*
4. The TIAS presents motor vehicle crash data for each study area intersection. The crash data indicates the number, type, and severity of crashes at the study area intersections between 2017 and 2022 obtained from MassDOT crash portal. The TIAS stated that the intersection crash rates are lower than the MassDOT District 4 and Statewide averages. Overall, four crashes were identified at the study area intersection and no notable safety trends were identified that require further investigation. TEC concurs with the crash analysis methodology and findings based on the compiled data. *No response required.*

TEC noted that intersection of Elm Street / Haverhill Street, located within 500 feet from the proposed east site driveway, is a high-volume intersection and experienced a higher crash trend within the past three years. Although it is not expected to have any specific capacity-related impacts issue, the Applicant should provide crash statistics and address any safety deficiencies that may be associated with the site driveway intersections along Haverhill Street.

5. The background growth rate of 1.0 percent per year was applied to the 2023 existing volumes to generate the 2030 future year volumes per MassDOT guidelines. TEC concurs with this methodology. *No response required.*
6. Site trip generation calculations for the proposed Project were generated based on the Institute of Transportation Engineers (ITE) *Trip Generation Manual, 11<sup>th</sup> Edition*, Land Use Code (LUC) 937 – Coffee/Donut Shop with Drive-Through Window, and empirical data obtained by CES, Inc. as part of a study conducted by others. In order to provide conservative trip generation estimate, the Applicant utilized the weekday morning peak hour trip generation data from the study by Eaton Traffic Engineering. The daily and weekday evening peak hour trips were determined based on a proportional relationship to the average trip rates found in LUC 937 for the related time periods. On page 18 of the TIAS, it is mentioned that ITE 8<sup>th</sup> Edition was reviewed. The Applicant should clarify how the use of ITE 8<sup>th</sup> Edition contributed to obtaining trip generation data. TEC generally concurs with the use of empirical data for a similar Aroma Joe's coffee shop. However, it is noted that no supporting documentation has been provided to validate the data collection process, including details regarding the facility's size, data collection timing, volume on the adjacent street, and service rates, all of which are integral to the TIAS.

The TIAS accounts for passby trips consists of vehicles passing by the site on their way to another destination. A pass by trip rate of 70 percent was applied to trip generation numbers. TEC understands that the pass by trip rate was utilized based on information provided as part of a study that was done for similar Aroma Joe's coffee shop in Augusta, Maine. However, the information was not supplied in the appendix. The Applicant should provide additional backup on how this rate was estimated and provide a narrative regarding the characteristics

of Bangor Street, adjacent to the Aroma Joe's in Augusta, Maine, and Haverhill Street in Methuen in terms of daily volumes and trip numbers.

7. The traffic generated by the proposed project was reasonably distributed onto the adjacent roadway system based on the existing pattern, which is acceptable for coffee shop uses. *No response required.*
8. The Build traffic volumes were grown to 2030 to cover 7-year planning horizon from time of data collection (2023). TEC concurs with this methodology as 7-year planning horizon aligns with MassDOT Transportation Impact Assessment (TIA) Guidelines. *No response required.*
9. TEC generally concurs with the results of the capacity and queue analysis provided as part of the TIA utilizing Highway Capacity Manual (HCM) 6<sup>th</sup> Edition methodology for the unsignalized intersections. The 2029 Build condition shows acceptable levels of service and maintains low vehicle delays. *No response required.*
10. To properly assess roadway operations and safety, including sight distance, the Applicant utilized the 85th percentile travel speeds along Haverhill Street which is noted to be 34 MPH eastbound and 32 MPH westbound in Table 3 of the TIAS. The measured speeds are higher than the posted speed limit of 30 MPH on Haverhill Street. These travel speeds were measured by the ATR in June 2023. The sight distances reported in Table 11 of the TIAS are measured at the intersections of Haverhill Street at Site Driveways in accordance with the American Association of State Highway and Transportation Officials (AASHTO) requirements to operate in a safe manner. *TEC generally concurs with the Applicant's sight line methodology.*

The intersection sight lines were partially obstructed at both driveway intersections with Haverhill Street due to roadway's horizontal curvature. The Applicant should maintain any proposed plantings low to the ground (no more than 2.0 feet above street level) within the sight line triangles along the site frontage. The sight lines should be depicted on the site plan based on AASHTO criteria. In addition, the Applicant should confirm that occupancy of the parking lot for the abutting building located (east of the Project along Haverhill Street) will not impede the sight lines.

In addition to the site driveways, TEC recommends that the Applicant review the sight line characteristics for the Madison Street approach to Haverhill Street. This is particularly important as the existing retaining wall and on-street parking along Haverhill Street appear to limit visibility when looking west. This restriction in sight lines could potentially pose challenges at the intersection of Haverhill Street / Madison Street because the proposed easterly site driveway will provide additional vehicle conflicts within the intersection.

11. The Applicant should provide parking demand observations from a similar Aroma Joe's Facility in order to demonstrate that the limited employee/patron parking supply will be sufficient to accommodate the parking demands of the Project.

### **Traffic Engineering Site Plan Review**

12. TEC recommends the Applicant coordinate with the Town of Methuen Fire Department to review site emergency access considerations. The Applicant's engineer should provide a truck turning analysis using a City of Methuen fire apparatus to ensure that emergency vehicles are able to navigate in and out of the site.

13. The Applicant should specify the types of delivery trucks permitted on-site. Since there is no formal loading zone identified on the site, a narrative should be provided indicating how loading/deliveries and trash/recycling will be managed off-hours.
14. A marked stop line should be provided for vehicles exiting the site driveway approaches to Haverhill Street. The Applicant should confirm the sight line characteristics from the proposed stop line location and adjust signage, if necessary.
15. The sight triangle areas for the site driveway intersections with Haverhill Street should be shown on the Site Plans along with a note to indicate: "Signs, landscaping and other features located within sight triangle areas shall be designed, installed, and maintained so as not to exceed 2.5-feet in height. Snow windrows located within sight triangle areas that exceed 3.5-feet in height or that would otherwise inhibit sight lines shall be promptly removed."
16. A note should be added stating: "All Signs and pavement markings to be installed within the Project site shall conform to the applicable specifications of the Manual on Uniform Traffic Control Devices (MUTCD).
17. Based on Car Queuing Detail map (Sheet 4 of the Site Plan), access to the drive-thru bypass lane is partially obstructed by vehicle queuing. This can get elevated when loading and delivery trucks are behind the queue and cannot access the site. TEC recommends widening the full access driveway to extend the bypass lane to Haverhill Street.
18. The car queuing detail map should be revised to account for a more realistic spacing between queued vehicles. TEC typically uses 22 to 25 feet for a vehicle length, including the buffer between vehicles.
19. Bicycle parking should be provided at an appropriate location that is accessible to employees and customers.

#### **Civil Engineering Site Plan Review**

20. According to Article XII, Section 12.3.A.3: "*Whenever outside lighting is proposed, every application shall be accompanied by a lighting plan...*". The Applicant should include a photometric plan.
21. The Applicant has stated that the proposed drive-through is to be a maximum building height of one story. TEC recommends including an Architectural Plan to show that the Applicant meets the zoning requirement of a maximum building height of forty (40) feet as well as revising the Zoning Table provided on the Cover Sheet of the Site Plans.
22. TEC acknowledges that the Applicant has provided at least 20' of a drive aisle for the ninety-degree parking along the western perimeter of the site. However, the vehicle queuing detail provided in the Site Details sheet, results in a drive aisle less than 20'.

23. The Applicant should confirm that the current proposed location for the dumpster will not result in any traffic congestion issues with the current drive through layout.
24. TEC recommends adding a wheelchair ramp along the western curb line of the parking lot connecting to the proposed sidewalk.
25. The Applicant includes a “Deep Sump Catch Basin” as well as a “Shallow Catch Basin” within the Site Details sheets. TEC recommends clarifying where the two types of catch basins are being proposed.
26. TEC recommends adding spot grades to the Grading & Utility Plan for each wheelchair ramp and along walkways to clarify the design satisfies ADA and MAAB regulations and matches the provided details.
27. TEC recommends calling out the connection between proposed curbing and existing curbing as well as proposed pavement tie ins to the existing pavement within the Grading & Utility Plan to clarify the connection between the proposed construction and Haverhill Street.
28. The Applicant proposed a “Top of Curb” elevation of 140’ near the southwest corner of the proposed parking lot. The Applicant also proposed a 140’ contour that runs adjacent to the curb within the parking lot. TEC recommends adding Top of Curb as well as Bottom of Curb elevations throughout the Grading & Utility Plan to clarify the elevations of the proposed curbing.
29. TEC recommends adding the material, diameter, length, and slope of each proposed pipe throughout the project.
30. The Applicant is proposing a Roof Drain connecting to DMH-2. TEC recommends calling out the Roof Drain within the Grading & Utility Plan.
31. The Applicant is proposing a pipe connection from DMH-2 to the underground storage chamber. TEC recommends adding an invert elevation to this pipe going into the underground storage chamber.
32. It appears OCS-1 was designed in the Site Details Sheet with an orifice elevation that is inconsistent with the Grading & Utility Plan. The Applicant should revise the plans to be consistent with what is being proposed.
33. The Applicant includes a dumpster pad enclosure detail within the Site Details sheets. TEC recommends revising the plans and/or details so that the dimensions shown on the Site Details are consistent with what is proposed on the Site Plans.

### **Stormwater Management Review**

1. Standard 1 states that no new stormwater conveyances (e.g., outfalls) may discharge untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth.

The Applicant appears to be compliant with Standard 1.



2. Standard 2 requires that stormwater management systems must be designed so that post-development peak discharge rates and volumes do not exceed pre-development peak discharge rates and volume.

The Applicant includes a Stormwater Discharge Summary Table comparing the pre and post development discharge rates for Design Point 1. Within the Regulatory Compliance narrative, the Applicant states that the post development discharge rate increases at Design Point 2. TEC recommends revising the narrative and/or HyrdoCAD Report as there is no Design Point 2.

3. Standard 3 requires that the annual recharge from the post-development site should approximate the annual recharge rate from pre-development or existing site conditions, based on soil types.

The Applicant has provided Recharge Volume Calculations and appears to be compliant with Standard 3.

4. Standard 4 requires that the stormwater system must be designed to remove 80% of the average annual load of Total Suspended Solids (TSS).

The Applicant has provided treatment train TSS calculations sheets. It appears the Applicant has designed a stormwater management system that removes at least 86% of the TSS and therefore compliant with Standard 4.

5. Standard 5 is related to projects with a Land Use of Higher Potential Pollutant Loads (LUHPPL).

The proposed project is not considered a LUHPPL; therefore Standard 5 is not applicable.

6. Standard 6 is related to projects with stormwater discharging into a critical area, a Zone II or an Interim Wellhead Protection Area of a public water supply.

The Applicant stated that the proposed project will not discharge into a critical area, Zone II, or an Interim Wellhead Protection Area of a public water supply. Standard 6 is not applicable.

7. Standard 7 is related to projects considered Redevelopment. A redevelopment project is required to meet the following Stormwater Management Standards only to the maximum extent practicable: Standard 2, Standard 3, and the pretreatment and structural best management practice requirements of Standards 4, 5, and 6. Existing stormwater discharges shall comply with Standard 1 only to the maximum extent practicable. A redevelopment project shall also comply with all other requirements of the Stormwater Management Standards and improve existing conditions.

The proposed project is not considered a redevelopment.

8. Standard 8 requires a Construction Period Pollution Prevention Plan (CPPP) and Erosion and Sedimentation Control Plan to be implemented to prevent impacts during disturbance and construction activities.

The Applicant stated that the proposed project is not required to obtain coverage under the Environmental Protection Agency (EPA) National Pollutant Discharge Elimination System

(NPDES) Construction General Permit. A construction period pollution prevention and erosion and sedimentation controls are included in the report in compliance with Standard 8.

9. Standard 9 requires an Operation and Maintenance (O&M) Plan to be provided.

The Applicant has provided an Operation and Maintenance Plan included in the Long Term Pollution Prevention Plan in compliance with Standard 9.

10. Standard 10 Prohibits all illicit discharges to the stormwater management system.

No Illicit Discharge Statement has been provided to satisfy Standard 10. However, the Applicant stated there are no known illicit discharges generated by the property owner and no illicit discharges are proposed. TEC recommends an illicit discharge statement to be provided prior to issuance of a building permit.

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

Sincerely,  
TEC, Inc.

*"The Engineering Corporation"*



Peter F. Ellison, P.E.  
*Director of Strategic Land Planning*