

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

April 8, 2024

Ref. T0222.97

Re: Proposed Dunkin' Donuts – 477 & 479 Broadway
Civil & Traffic Engineering Peer Review #1

Dear Ms. Bradley-Colwell and Members of the Planning 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 Dunkin' Donuts Development at 477 & 479 Broadway in Methuen, Massachusetts ("the Project"). The Project consists of removing the existing concrete walkways and overgrown vegetation and constructing a 2,100 square feet (sf) Dunkin' Donuts restaurant with a single drive through window and twenty-four (24) indoor seats. The proposed project provides access by two 20-foot wide one-way driveways on Broadway with the "Entrance" driveway to the south and "Exit" driveway to the north. The following documents were considered as part of our review:

- *Traffic Impact and Access Study – Proposed Donut Shop- 477 & 479 Broadway, Methuen, Massachusetts; prepared by GPI, dated January 31, 2024;*
- *"Application For Special Permit" prepared by GPI, dated March 6, 2024;*
- *"Proposed Site Plan" prepared by GPI, dated March 6, 2024;*
- *"Stormwater Management Report", prepared by GPI, dated March 6, 2024;*
- *"Operation & Maintenance Plan", prepared by GPI, dated March 6, 2024*
- *"Lighting Proposal", prepared by LSI, dated December 28, 2023*

In addition, TEC is in receipt of the letter titled "477 & 479 Broadway – Dunkin Donuts", prepared by Stephen J. Gagnon, CPWP-M of the Methuen DPW Engineering Division, dated March 18, 2024.

Upon review of the documents and plans, TEC has compiled the following comments for the Board's consideration:

Site Plan Review

1. It is noted that the applicant has not submitted any materials requesting a waiver.
2. According to Methuen's Zoning Ordinance, Section 12.3.A(3)(e) with regards to the photometric plan '...light trespass onto any street or abutting lot will not occur.' Spot locations outside of the property lines of up to 0.9 lumens are shown to occur on the photometric plan.

3. It is noted that to reduce the required 60 foot vegetated buffer to the residential district east of the site, the Applicant is proposing a six (6) foot high solid stockade fence with a 30 foot vegetated buffer to the property line. The applicant should provide a detail of this fence for the board's approval.
4. TEC acknowledges that the Applicant has provided at least 18' of a drive aisle for the sixty-degree parking along the northeastern perimeter of the site in accordance with the bylaws. However, the vehicle queuing detail provided in Sheet 5 Site Plan encroaches upon this, and results in a drive aisle of less than 18'.
5. 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.
6. According to the Grading & Drainage Plan, the landscape area east of the proposed building, and the concrete sidewalk and landscape area west of the proposed building appears to have a 0% slope as the finished floor elevation is 117.5' and the top of curb is presumed to be 117.5' with a 6" reveal. TEC recommends revising the plans to ensure that potential runoff will be flowing away from the building.
7. It appears that the slope between the 116.15' spot grade and the 116 contour at the ADA crosswalk adjacent to the drive through entrance exceeds 5%. TEC recommends revising the grading in this area.
8. 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.
9. The Applicant should revise the following in relation to the dumpster pad located at the northeast corner of the site:
 - a) Spot grades within the area of dumpster pad to avoid a low point and potential ponding.
 - b) The Site Plans and/or Detail Sheet so that the bollards shown on the Detail Sheets are consistent with what is proposed on the Site Plans.
10. The Applicant includes a flared accessible ramp detail which includes a 5' minimum clearance adjacent to the top of the ramp. According to the Site Plan, it appears there is only a 3' clearance between the top of ramp and proposed building. TEC recommends the Applicant revise the plans to be consistent.
11. According to 'Massachusetts' Stormwater Best Management Practices', in respect to infiltration basins: *"Distance from any building foundations including slab foundations without basements – Minimum of 10 ft. downslope and 100ft. upslope."* The Applicant should adjust the location of the underground infiltration system as it appears to be less than 10 feet from the proposed building.
12. Several utility crossings and conflicts are shown in the southern aisle on the Utility Plan. The applicant should show either proper utility separation, or provide elevations and details for proposed utility crossings.
13. The Applicant should include base elevations for the test pit logs to clarify the respective elevations of the subsurface materials.

14. TEC recommends the Applicant extend the proposed erosion control measures along the saw cut location within the northern drive aisle to avoid potential runoff into Broadway during construction.
15. The Applicant is proposing a drive-thru bump bar that extends approximately 9.5' into the inner drive aisle. TEC recommends the Applicant revise so that an emergency vehicle can sufficiently maneuver around the clearance bar.

Stormwater Management Review

16. According to the Grading & Drainage Plan, it appears the break in grade at both site entrances leads to additional proposed impervious area runoff towards Broadway. TEC recommends the Applicant revise these grade breaks to retain the site stormwater onsite to the maximum extent..
17. According to the Pre-Development Drainage Area Plan and HydroCAD Report, it appears the project area is modeled as one subcatchment area that directly flows to Design Point-1. However, a catch basin appears to be present within the existing conditions plans. TEC recommends the Applicant model the existing catch basin in the HydroCAD Report to accurately evaluate pre-development peak flows at Design Point 1, and stormwater entering the roadway.
18. Subcatchment 100S of the Post-Development shows flows from a large area from mostly offsite land, sheet flowing over the sidewalk/driveway entrance and flowing offsite before being captured in the roadway drainage system. The contours of the Existing Conditions appears to show the majority of this water being captured in a catch basin on site and not flowing offsite to the roadway. The Applicant should consider adding a structure to similarly capture this runoff to avoid sending additional surface water to the roadway in the Post condition.
19. The Applicant should revise the following in relation to subcatchment area '6S' of the Post-Development HydroCAD:
 - a) The routing method of the subcatchment as it is currently designed to flow directly to the underground detention system. Within the Grading & Drainage Plan, it appears stormwater runoff is conveyed overland from the patio to CB-2.
 - b) The subcatchment area is currently modeled as entirely impervious area. Within the Post-Development Drainage Area Plan, it appears the subcatchment area includes the concrete patio area as well as the landscape area adjacent to the proposed building.
20. The Applicant has provided the HydroCAD node summary pages for only for the 25-year storm. TEC requests the Applicant include summaries for all nodes for all storms
21. TEC recommends the Applicant include pipe sizing calculations to ensure adequate pipe capacity.

Traffic Impact and Access Study Review

22. Broadway is under the jurisdiction of the Massachusetts Department of Transportation (MassDOT). The Applicant will be required to file a Permit to Access State Highway with MassDOT District 4 as part of their approval. The City should consider including a condition to any approval of the site plan requiring completion of an approved MassDOT Permit to Access State Highway prior to the issuance of a Building Permit. The City should share all applicable traffic comments with MassDOT District 4 as they may be helpful in guiding their review.

23. The Traffic Impact and Access Study (TIAS) included the following intersections within the study area:

- Broadway (Route 28) / Rosewood Road / Village Mall Driveway
- Broadway (Route 28) / Rostrons Liquors exit-only Driveway (471 Broadway)
- Broadway (Route 28) / CREST Collaborative Driveway (464 Broadway)

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

24. Traffic volume counts, including Turning Movement Counts (TMCs) and Automatic Traffic Recorder (ATR) data, were conducted at the study area roadway and intersections in January 2024 when schools were in session. The recorded volumes for this period were found to be lower than the average monthly conditions based on review of the historical traffic-volume data obtained from the New Hampshire Department of Transportation (NHDOT) and MassDOT continuous count station on Broadway and Interstate 93 (I-93). A conservative seasonal adjustment factor of 7.6 percent were applied based on MassDOT count station on I-93 in Methuen, Massachusetts, and the New Hampshire State Line. TEC concurs with this methodology. *No response required.*

25. 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 2015 and 2019 obtained from MassDOT crash portal. With exception of the intersection of Broadway / Rosewood Road / Village Mall, the TIAS stated that the intersection crash rates are lower than the MassDOT District 4 and Statewide averages with no notable safety trends that require further investigation. The Applicant should also evaluate crashes that occurred between 2021 and 2023 to assist in evaluating more recent crash history.

The intersection of Broadway / Rosewood Road / Village Mall experienced an average of 14 collisions per year over the five-year study period. The crash rate of 1.31 c/mev is well above the statewide (0.78 c/mev) and districtwide (0.73 c/mev) averages for a signalized intersection. It's noteworthy that this intersection was included in the Highway Safety Improvement Plan (HSIP) listing between 2017 and 2019. Previously, a Road Safety Audit (RSA) was conducted in 2014 for the Route 28 Resurfacing project, extending from Rosewood Road to NH State Line (MassDOT Project # 607709). This audit recommended various safety enhancements, including signal timing adjustments, the addition of left-turn pockets on Route 28, the introduction of a left-turn phase for Route 28 southbound, restrictions on left turns onto Rosewood Road from Route 28, and the implementation of protected-only left-turn phasing for Route 28. With the exception of the signal timing adjustments, none of these enhancements have been implemented at this private site location. The TIAS has incorporated the signal timing adjustments as part of their capacity analysis for the Future Conditions with Mitigation. Ultimately, the review of the safety-related aspects of the driveway configuration lie under MassDOT's exclusive jurisdiction.

26. The background growth rate of 1.0 percent per year was applied to the 2024 existing volumes to generate the 2031 future year volumes per MassDOT guidelines. The traffic associated with a 4,859 sf carwash, Tuscan Village, and Taco John's development was factored in using either the Institute of Transportation Engineers (ITE) statistics or studies prepared specifically for these developments these developments. TEC concurs with this methodology. *No response required.*

27. The trip generation of the proposed Project was assessed to determine if the proposed Project would meet or exceed any thresholds that would require formal environmental review with respect to traffic under Massachusetts Environmental Policy Act (MEPA). Based on this review, TEC concurs that the Project-related traffic does not exceed MEPA thresholds and therefore no Environmental Notification Form (ENF) appears to be required based on the traffic-related thresholds.
28. Site trip generation calculations for the proposed Project were generated based on the ITE *Trip Generation Manual, 11th Edition*, Land Use Code (LUC) 937 – Coffee/Donut Shop with Drive-Through Window. It is noteworthy that Dunkin's shop ("The Existing Dunkin's"), situated at 450 Broadway (approximately 300 feet south of the proposed Project and on the opposite side of Route 28), will be closed, and operations will transition to the proposed Project site. The existing Dunkin's site is anticipated to be replaced by a quick-service restaurant, consequently, no traffic "credits" were applied. Overall, the TIAS presents an above-average analysis condition and TEC generally concurs with this methodology. However, in conjunction with Comment #10, traffic volume counts for a 4-hour period (7:00 AM -9:00 AM; 4:00 PM – 6:00 PM) should be collected to validate ITE trip generation findings based on the apparent high volume of patron traffic.
29. The TIAS accounts for pass-by trips consists of vehicles passing by the site on their way to another destination. A pass by trip rate of 50 percent during the weekday daily, Saturday daily, weekday AM, and Saturday midday peak hour and 55 percent during weekday evening peak hour was applied to trip generation numbers based on pass by trip rate information provided in ITE Trip Generation Manual. TEC concurs with this methodology. *No response required.*

The traffic generated by the proposed Project was distributed onto the adjacent roadway system based on the existing pattern, which is acceptable for coffee shop uses. That being said, to provide accurate depiction of traffic entering and exiting the Project site, the Applicant should perform a spot count at the existing Dunkin's. The Applicant should detail any analysis changes that may occur due to the change in traffic pattern along Broadway as the majority of the morning Project-related traffic is likely to enter from the north and exit toward south (right-in / right-out) based on major commuter trends. These discussions should be included as part of the Applicant's discussions with MassDOT District 4 because the relocation of the Dunkin' facility from the west side of Route 28 to the east side may result in a higher volume and increased delays for southbound entering left turns and exiting left turns.

30. The Build traffic volumes were grown to 2031 to cover 7-year planning horizon from time of data collection (2024). TEC concurs with this methodology as 7-year planning horizon aligns with MassDOT Transportation Impact Assessment (TIA) Guidelines. *No response required.*
31. TEC generally concurs with the results of the capacity and queue analysis provided as part of the TIAS which utilized the Highway Capacity Manual (HCM) 6th Edition for unsignalized and HCM 2000 for signalized intersections. However, TEC reserves the right to provide additional comments related to the revised capacity queue analysis for Route 28 southbound based upon the above comments.

32. Operations at the signalized intersection of Broadway / Rosewood Road / the Village Mall Driveway were shown to operate overcapacity during the Saturday midday peak hour, independent of the Project. The Applicant has demonstrated that the impact of the Project can be mitigated with adjustments to signal timings. Therefore, it is recommended that the Applicant commits to adjusting signal timings as necessary. TEC concurs that the Project-related impact is minimal at the intersections of Broadway / Rostrins Liquors Driveway and Broadway / CREST Collaborative Driveway.
33. The drive-through window lane is proposed to be 10-feet wide and provide storage for 14 vehicles without interrupting on-site circulation. The Applicant utilized three queue observations that were performed in 2014. Two observations were made in Londonderry, NH during weekday morning and one in Peabody, MA during weekday morning and Saturday midday. Based on these vehicle queue data, the vehicle queue for the drive-through window is anticipated to accommodate demand without interrupting traffic flow on site or along the adjacent roadways. TEC concurs with this statement. *No response required.*
34. To properly assess roadway operations and safety, including sight distance, the Applicant utilized the 85th percentile travel speeds along Broadway which is noted to be 40 MPH northbound and 39 MPH southbound in Table 3 of the TIAS. The measured speeds are higher than the posted speed limit of 35 and 30 MPH on Broadway northbound and southbound approaches, respectively. These travel speeds were measured by the ATR in January 2024. The sight distances reported in Table 4 of the TIAS are measured at the Site Driveway Exit-Only intersection with Broadway in accordance with the American Association of State Highway and Transportation Officials (AASHTO) requirements to operate in a safe manner. TEC concurs with the Applicant's sight line methodology. *No response required.*
35. The Applicant should provide additional information whether a parking supply of 20 stalls will be adequate to meet the demands of the Project, especially considering that the existing Dunkin facility offers approximately 32 stalls. TEC recommends that the Applicant perform a parking demand observations at the existing Dunkin Facility in order to demonstrate that the parking supply will be sufficient to accommodate the parking demands of the Project.

Traffic Engineering Site Plan Review

36. A marked stop line should be provided for vehicles exiting the Site Exit-Only Driveway approach to Broadway. The stop sign and 'Do not enter' signs should be mounted on different posts due to the shape/visibility requirements of the Manual on Uniform Traffic Control Devices (or MUTCD).
37. The Applicant should consider restricting the flow of traffic within the front parking area to one-way northbound only and slightly narrowing the parking aisle width. This flow restriction could reduce pedestrian and vehicular conflicts within the parking lot.
38. The proposed crosswalk location depicted on the Site Plan appears to cross directly behind parking spaces or directly within the reverse path of a vehicle. Depending on the response to Comment #37, the Applicant could consider relocating the crosswalk to the northerly end of the parking aisle to allow the pedestrians to be in front of the motorist.

39. TEC recommends that the proposed parking spaces located in the easterly portion of the site be assigned as employee-only parking with accompanying signage to reduce patron traffic and pedestrian conflicts through the drive-through and bypass lanes.
40. Based on the Truck Turn Plan a WB-50 truck can narrowly access and circulate through the bypass lane or drive-through lane, as necessary. 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.
41. 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.
42. The sight triangle areas for the site driveway intersection with Driveway 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."
43. 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)."

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"



David Nader, PE
Project Manager



Kevin Dandrade, PE, PTOE
Principal