



December 16, 2022

Tim Toomey  
Subaru New England  
1201 Providence Highway  
Norwood, MA 02062

**RE: Traffic Impact Study - Response to Peer Review Comments  
701-713 Boston Turnpike Road (Route 9) – Auto Dealership  
Shrewsbury, MA**

Dear Mr. Toomey:

McMahon Associates (McMahon) has prepared the below responses to the MDM Transportation, Consultants, Inc. Peer Review comments dated November 29, 2022 for the Traffic Impact Study prepared by McMahon dated October 2022. Comments 10-12 pertain to the site plans which are being prepared by Thompson-Liston Associates, Inc. and therefore McMahon has not provided responses to those comments.

- 1. Study Area: Study locations include the Route 9 and South Street signalized intersection and the proposed driveway intersections along South Street and Route 9. MDM concurs that these study locations are appropriate and in context with the likely traffic impacts for the Project and are consistent with recommended study area guidelines identified by MassDOT.**  
Comment noted.
- 2. Traffic Volumes: Traffic volumes for study area locations were conducted in September 2022 for the weekday Amp, PM and Saturday Midday peak hours. Although MassDOT seasonal correction factors indicate September is an above-average month, no downward adjustment (reduction) In volumes was applied to present a conservative analysis condition. MDM has reviewed the September 2022 data against pre-pandemic 2019 count data for the Route 9 at South Street intersection from prior studies and find that the traffic volumes presented in the TIS are highly consistent with these pre-Pandemic baseline conditions. Likewise, comparison to more recent April 2022 data for Route 9 at South Street from another recent study indicates similar volume conditions. Accordingly, baseline traffic volume data I the TIS presents a reasonable basis for analysis purposes.**  
Comment noted.
- 3. Accidents/Crash Data: MDM recommends that the Applicant conduct an updated review of crash data for the Route 9 at South Street intersection to include local police crash records for the period 2020 to present to augment the MassDOT crash database. Additionally, Applicant should consider implementation of recommendations cited in the 2019 RSA that**

**specifically identifies near-term safety improvement actions; field review indicates that several of these near-term improvements have yet to be completed.**

McMahon requested police crash records from the Town of Shrewsbury for January 2020 to November 2022. A summary of the additional crash analysis will be included in the updated TIS.

The project team had a pre-application meeting on December 8, 2022 with MassDOT where MassDOT confirmed they would have to be involved in the approval of any RSA improvements implemented at the intersection of Route 9 at South Street. As such, any potential improvements from the RSA would be further discussed with MassDOT during the access permit process for the project. Additionally, based on the pre-application meeting with MassDOT noted that the near-term improvements had been completed as of 2021.

**4. Vehicle Speeds: MDM recommends that a speed study be conducted by Applicant to determine average and 85<sup>th</sup> percentile travel speeds for purposes of validating design assumptions and driveway sight line requirements.**

A speed study was conducted at the location of the proposed driveway using a radar gun on Boston Turnpike (Route 9) to determine the 85<sup>th</sup> percentile speed on the roadway. The speed study was performed on Thursday, November 10, 2022 at approximately 4:15 PM when the traffic volumes are typically lower than those in the afternoon peak hour and vehicle speeds are not affected by peak traffic conditions. A total of 40 speed samples were collected on Boston Turnpike in the westbound direction for the purpose of this study.

	Westbound <sup>(1)</sup>
Posted Speed Limit	50
High	50
Low	25
<b>85<sup>th</sup> Percentile</b>	<b>39</b>

(1) Speed data in miles per hour (mph).

The 85<sup>th</sup> percentile speed on the westbound approach of Boston Turnpike (Route 9) at the location of the proposed site driveway was determined to be 39 mph, which is less than the posted speed limit of 50 mph. A summary of this data will be included in the updated TIS.

**5. Driveway Sight Distance: Evaluation of sight line requirements for Site driveways should be provided based on measured/ambient 85<sup>th</sup> percentile travel speeds along with a statement confirming compliance with applicable sight line criteria. The Site Layout Plan should clearly indicate intersection sight triangles and include a note citing that “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.” Additional commentary on driveway design considerations is provided under Comment 10.**

The available sight distances at the proposed driveway locations on Boston Turnpike (Route 9) and South Street were measured and evaluated based on the 85<sup>th</sup> percentile speed data and are summarized in the table below.

Site Driveway		85th % Speed	SSD <sup>1</sup> Required	ISD <sup>2</sup> Recommended	Sight Distance Measured	Meets Required SSD?
Location	Looking	(mph)	(feet)	(feet)	(feet)	
South Street DW	Left (North)	38	280	365	700	Yes
Boston Turnpike DW	Left (East)	39	290	375	310 <sup>3</sup>	Yes

<sup>1</sup> Stopping sight distance (see AASHTO equations 3-2 and 3-3) for the 85th percentile speeds.

<sup>2</sup> Intersection sight distance (see AASHTO equations 9-1 and 9-2) for the 85th percentile speeds.

<sup>3</sup> Measured available sight distance would be increased by removal of existing vegetation

A summary of this data will be included in the updated TIS. Thompson-Liston will include the requested sight triangles and accompanying note on the updated site plans in accordance with Comment 10.

- 6. Traffic Growth: MDM advises that additional background traffic growth be considered including Centech Park North, Edgemere Crossing at Flint Pond, occupancy of vacant building space at UMass facility at South Street and Charles River Labs on South Street. Applicant should confirm that trips associated with these additional area vacancies or projects fall within the annualized growth assumptions of the TIS; otherwise, additional site-specific trips should be added to future volume networks consistent with other recent area studies. To the extent additional background traffic is identified, traffic volume networks and analysis should be updated accordingly.**

Traffic generated by the proposed distribution center, referred to as Centech Park, has been included in the 2029 traffic projections for the weekday morning, weekday afternoon and Saturday midday peak hour traffic volumes. All other developments mentioned above are considered to be included in the one percent per year (compounded annually) growth rate to account for general traffic growth in the area and future development projects that are not yet known. The updated future 2029 volumes and capacity analyses will be included in the updated TIS.

- 7. Trip Generation: Trip estimates for the Project are appropriately based on characteristics published by the Institute of Transportation Engineers (ITE) in Trip Generation 11<sup>th</sup> Edition for Land use Code (LUS) 840 – Automobile Sales. Net new trip generation is estimated to range from 101 to 132 vehicle-trips for weekday peak hours and 220 vehicle-trips for Saturday Midday peak hours using this methodology. MDM concurs that the application of ITE LUC 840 trip rates present a reasonable basis of estimating peak hour trip characteristics of the proposed use.**

Comment noted.

- 8. Trip Distribution: Modification of the South Street driveway to either (a) restrict use to emergency vehicles only; or (b) restrict operation to right-in/right-out as described in comment 10 should be evaluated to include re-assignment of trips to the Route 9 driveway. The South Street driveway will be redesigned by Thompson-Liston to allow for right-in/right-out only, physically restricting the movements with a raised median island and associated signage.**

The updated 2029 Build volumes and capacity analyses reflective of the right-in/right-out only driveway operations on South Street will be included in the updated TIS. Delivery trucks will utilize the Rt. 9 driveway to enter the site, and in order to have direct access to the signal would exit from the South Street driveway. Based on discussion with the Boch team, truck trips would be scheduled to be outside of peak hours.

**9. Operations Analysis: MDM advises that Applicant revise capacity and vehicle queue analysis for study intersections to include updated background growth assumptions per comment 6 and trip re-assignment to reflect a modified South Street driveway.**

The future 2029 volumes and analyses have been revised accordingly to include traffic projections for Centech Park and the revised South Street driveway configuration and will be included in the updated TIS. The revised analysis indicates that no significant changes in the operation of the signalized intersection of Boston Turnpike (Route 9) and South Street have been noted from the previous analysis completed.

**10. Site Access Design/Sight Lines: MDM recommends that the applicable sight line triangles be shown on the Site Plans along with measured sight lines to confirm that minimum sight line criteria are met, and if possible, the ideal Intersection Sight Distance (ISD). The sight line triangles should not encroach onto adjoining (private) property to achieve sight line criteria. The Site Layout Plan should also include a note citing that "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."**

Thompson-Liston to address.

**Site Access Design/South Street Driveway (i): Given the above characteristics and observations, MDM advises that the Applicant reconsider the need for South Street access given the availability of a more prominent commercial driveway along Route 9 that is better positioned to accommodate traffic and that is not influenced by signal vehicle queueing. To the extent a South Street driveway is advanced, MDM recommends (at a minimum) that the driveway be restricted to right-in-right-out movements (ie., be designed to physically restrict left-turn movements) or preferable be gated for emergency access use only.**

See McMahon's response to comment 8.

**Site Access Design/South Street Driveway (ii): Further commentary on the proposed South Street driveway relates to grading. Plans for the driveway should clearly indicate driveway profile, ensure that there is an appropriately dimensioned level landing area/length, that adequate sight lines are provided to meet applicable AASHTO design criteria for measured 85<sup>th</sup> percentile travel speeds and that drainage from the driveway does not impact the South Street corridor.**

Thompson-Liston to address.

- 11. Site Circulation (a): MDM questions the need for larger vehicle deliveries via the South Street driveway; the Route 9 driveway is more proximate to the vehicle inventory parking area. Analysis indicates the swept path turning left from South Street also encroaches on the outbound/exiting driveway lane. We advise limiting commercial vehicle access/egress to the Route 9 driveway.**

Thompson-Liston to address.

**Site Circulation (b): Applicant should confirm that the Site Layout Plan provides sufficient maneuvering area to accommodate the Town's largest responding fire apparatus (ladder truck) by conducting AutoTurn vehicle turn analysis/exhibits.**

Thompson-Liston to address.

**Site Circulation (c): Modeling of service/delivery vehicles to/from the loading/delivery receiving area of the building should be provided for the appropriate/anticipated design vehicle types.**

Thompson-Liston to address.

- 12. General Site Plan Comments (Transportation) (a): Americans with Disabilities Act (ADA) compliant wheelchair ramps and crossing should be provided at all pedestrian crossings internal to the Project site and at the South Street site driveway. MDM defers to MassDOT on whether the Route 9 driveway requires these design features, or whether a sidewalk connection to Route 9 is necessary.**

Thompson-Liston to address.

**General Site Plan Comments (Transportation) (b): Consideration should be given to installing electric vehicle (EV) charging stations within the Project Site at convenient and easily accessible locations to encourage EV use.**

Thompson-Liston to address.

Please let us know if you have any additional questions.

Sincerely,



Maureen McHugh, P.E.  
Project Manager