



# Memorandum

**To:** Mr. Doraid Markus, Markus Management Group  
**From:** Michael J. Labadie, PE and Jill M. Bauer, PE, PTOE  
**Date:** June 15, 2021  
**RE:** Traffic Impact Study for Proposed Commercial Development, Northeast Corner of Avon Road and Rochester Road – City of Rochester Hills Comments Review

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ROWE Professional Services Company has completed our review of the City of Rochester Hills comments from the “First Reviewed Plans” document for the proposed commercial development. Below is a list of the comments related to the traffic impact study and our responses.

**Comment: Right-in/right-out only on Avon Road.**

Response: An investigation into the 95<sup>th</sup> percentile queue lengths from SimTraffic presented at the intersection of Avon Road and the proposed driveway indicated a length of 165 feet (8 vehicles) during the AM peak hour and 70 feet (4 vehicles) during the PM peak hour for the southbound driveway modeled as a shared left/right-turn lane. The eastbound shared left/through lane presented queue lengths on 109 feet (5 vehicles) and 121 feet (6 vehicles) during the AM and PM peak hour, respectively.

A review of the SimTraffic simulations indicated during the AM peak hour there were a few occurrences when the westbound left-turn lane from the intersection of Rochester Road and Avon Road backed up near the site driveway. The westbound left-turn lane queue cleared when the traffic signal allowed. The westbound through lanes did not queue to the site drive nor did this occur during the PM peak hour.

Additionally, the proposed single driveway consolidates three existing driveways and is located further east from the intersection than the existing condition.

**Comment: Perform queuing analysis on drive-through using other nearby Starbucks (particularly Tienken and Rochester).**

Response: Vehicle queueing data at three Starbucks locations were reviewed. The locations were South Boulevard and Rochester Road (Rochester Hills), Auburn Road and Rochester Road (Rochester Hills), and University Drive and Squirrel Road (Auburn Hills). The results indicated the absolute maximum queue was 17 vehicles on a weekday and 18 vehicles on the weekend. The average maximum queue was 10 vehicles on a weekday and 14 vehicles on the weekend. The site plan presents storage for 12 vehicles. If the demand exceeds 12 vehicles, there is considerable space available for temporary queuing in the south circulation aisle.

**Comment: Land Use #820 Shopping Center already accounts for internal capture per the ITE Manual. The traffic study should not be including internal capture for any of the land uses.**

Response: The shopping center land use is being used for an unknown retail in addition to the other specific uses. This is acceptable per the ITE Trip Generation Handbook (except below).

*“A **shopping center** could also be considered a mixed-use development because it typically includes uses other than general retail such as restaurants, banks, and office. However, because data have been collected directly for them as a-stand-alone developments, shopping centers are considered in Trip Generation Manual as a single land use. The associated trip generation data presented in the Manual already reflect the effects of internal capture and the mixed-use nature of the center. Accordingly, **internal capture rates are not applicable and should not be used to estimate trips for shopping centers if using statistics and data for Land Use Code 820.** However, if the shopping center is part of a larger mixed-use development or if it is planned to have outparcel development of a significantly different land use type, such as residential, the site could be considered a mixed-use development for the purpose of estimating site trip generation.” (Section 6.3 Mixed-Use Development Classified as a Single Use, pg. 44-45)*

The later part of the statement quoted above mentions developments of significantly different land use types. This proposed development has significantly different land use types other than shopping center like the general office building.

**Comment: The drive-through should be at the south end of the building to allow vehicles to wrap the line all the way around and double the stacking space and to prevent staking onto Avon Road.**

Response: The site plan presents pavement markings and accompanying signage to direct patrons to travel around the building to get into the drive-through queue. Vehicles are directed by the same pavement markings and signage not to access the drive-through at the southeast end of the parking lot/circulating lanes. Based on this, vehicle stacking should not occur on Avon Road.

We hope this response memorandum meets your needs. If you have any questions, please feel free to contact us.