

Traffic Impact Study Summary

1. A traffic impact study, consistent with accepted practice across the country, was completed for this proposed project.
2. Turning movement traffic counts were collected at the intersection of Adams and Tienken Roads during the weekday AM (7:00 – 9:00 a.m.) and PM (4:00 – 6:00 p.m.) peak periods on November 29, 2017.
3. Based on a review of historic traffic counts available on the South East Michigan Council Of Governments (SEMCOG) website for Adams and Tienken Roads in the vicinity of the proposed development, traffic volumes have been relatively stable or even decreasing slightly over past several years. However, in order to provide a conservative analysis, a 0.5% annual growth rate was used in forecasting background increases in traffic, which are unrelated to this proposed development.
4. A build-out year of 2019 was assumed for this analysis.
5. Using the information and methodologies specified in the latest version of *Trip Generation (10th Edition)* published by the Institute of Transportation Engineers (ITE), the weekday AM and PM peak hour trips associated with the proposed Premier Day Care development are provided below.

ITE Trip Generation for Proposed Premier Day Care Development

Land Use	Land Use Code	Size	AM Peak Hour			PM Peak Hour			Week Day
			In	Out	Total	In	Out	Total	
Day Care Center	565	162 students	67	59	126	60	68	128	663
TOTAL TRIPS			67	59	126	60	68	128	663

6. The existing traffic volumes at the intersection of Adams and Tienken Roads were used to develop a trip distribution model for the AM and PM peak hours for traffic generated by the proposed development. The existing traffic patterns indicate the following probable distribution for the proposed development:

AM Peak Hour

37% from and 18% to the north
 17% from and 39% to the south
 31% from and 18% to the east
 15% from and 25% to the west

PM Peak Hour

26% from and 37% to the north
 30% from and 24% to the south
 25% from and 27% to the east
 19% from and 12% to the west

7. Traffic impacts are measured by an analysis called Level of Service (LOS). The basis of the analysis is comparing stopped delay per vehicle. According to the most recent edition (6th Edition) of the Highway Capacity Manual, level of service is a qualitative measure describing operational conditions of a traffic stream or intersection. Level of service ranges from A to F, with LOS A being the best. LOS D is generally considered to be acceptable. The following tables present the

criteria for defining the various levels of service for unsignalized and signalized intersections, respectively.

Level of Service Criteria (Unsignalized Intersection)

Level of Service	Average Stopped Delay/Vehicle (seconds)
A	≤10
B	> 10 and ≤ 15
C	> 15 and ≤ 25
D	> 25 and ≤ 35
E	> 35 and ≤ 50
F	> 50

Note: LOS "D" is considered acceptable in urban/suburban areas.

Level of Service Criteria (Signalized Intersection)

Level of Service	Average Stopped Delay/Vehicle (seconds)
A	≤10
B	> 10 and ≤ 20
C	> 20 and ≤ 35
D	> 35 and ≤ 55
E	> 55 and ≤ 80
F	> 80

Note: LOS "D" is considered acceptable in urban/suburban areas.

8. Currently, the Tienken/Adams intersection operates at LOS E (77.1 seconds of delay) during the AM peak hour and LOS E (72.7 seconds of delay) during the PM peak hour. This analysis indicated that while the intersection is currently operating at unacceptable levels, optimizing the traffic signal timing would allow all approaches to the intersection to operate at a LOS D during both the AM and PM peak hours. The optimized results are LOS D (51.0 seconds of delay) for the AM peak hour and LOS D (49.5 seconds of delay) for the PM peak hour.
9. With the addition of the proposed development traffic and the optimized traffic signal timing, the AM peak hour LOS is still "D" with 51.7 seconds of delay and the PM Peak hour is still "D" with 53.8 seconds of delay.
10. The two site access points will operate at LOS D or better during the peak hours as well.
11. The development plan includes a right-in/right-out (no left turns) at the Adams access and full movements drive at the Tienken access. Additionally, the west bound left turn lane on Tienken at Adams will be extended to the east 150 feet pursuant to a request from the Road Commission for Oakland County (RCOC). This addition will be an improvement that will allow the intersection to operate better as well as the development access on Tienken.
12. The planned access points and roadway improvements have been found to be acceptable to RCOC.