

MEMO

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To: **Holly J. Donoghue, PE**
City Engineer, Royal Oak, MI

From: **Jacob Swanson, PE, PTOE**
Fleis & VandenBrink

Date: **May 22, 2025**

Re: **11-Mile Road – Road Diet Sensitivity Analysis**
City of Royal Oak, Michigan
Traffic Engineering Study

INTRODUCTION

This memorandum has been completed as an addendum to the 11-Mile Road Diet Traffic Study prepared by Fleis & VandenBrink (F&V) dated June 20, 2022. The traffic study evaluated the potential impacts of a road diet on the existing section of 11-Mile Road, between Woodward Avenue (M-1) and Stephenson Highway. The results of the traffic study indicates that the proposed road diet would generally operate acceptably, with the recommended future conditions geometry at the study intersections.

The traffic study was completed in 2022, where the traffic volumes were adjusted in order to consider the impacts of COVID-19. The traffic volumes along the 11-Mile Road corridor have since increased; however, this increase cannot be confirmed to be related to post-COVID traffic, the recent completion of the I-75 construction projects, and/or the various other traffic diversions due to ongoing construction projects in the area. Therefore, a sensitivity analysis was performed to determine what percentage increase in traffic volumes will necessitate changes to the recommendations presented in the 2022 Road Diet Traffic Study.

SENSITIVITY ANALYSIS

This evaluation was performed assuming the baseline recommendations identified within the 2022 Road Diet Traffic Study. An iterative analysis was performed, in order to determine what percentage increase in traffic volumes will result in the proposed Road Diet and recommendations no longer being able to accommodate the projected traffic volumes throughout the corridor and at the study intersections. The network was analyzed to determine at what increase in traffic volumes the study intersections begin operating unacceptably.

Review of the peak hour traffic volumes indicates that the afternoon (PM) peak hour is the overall higher peak period for traffic along 11-Mile Road and was therefore utilized as the basis for this analysis. The results of the evaluation indicates that the major study intersection operations begin to fail at an approximately **30% increase** in the PM peak hour traffic volumes, over the baseline 2022 traffic volumes. The 2022 traffic volumes and Future Volumes thresholds are summarized in **Table 1**.

Table 1: Increased (30%) Traffic Volume Summary

11-Mile Road	PM Peak Hour (vph)		
Woodward Avenue to Maxwell Avenue	2022 Study	Failure Vol	Difference
Eastbound Traffic	694	902	+208
Westbound Traffic	662	860	+198
2-Way Traffic	1,356	1,762	+406

11-Mile Road		PM Peak Hour (vph)		
Main Street to Troy Street		2022 Study	Failure Vol	Difference
Eastbound Traffic	655	852	+197	
Westbound Traffic	654	851	+197	
2-Way Traffic	1,309	1,703	+394	
Troy Street to Gainsborough Avenue		2022 Study	Failure Vol	Difference
Eastbound Traffic	671	872	+201	
Westbound Traffic	607	789	+182	
2-Way Traffic	1,278	1,661	+383	
Campbell Road to Stephenson Highway		2022 Study	Failure Vol	Difference
Eastbound Traffic	609	792	+183	
Westbound Traffic	626	814	+188	
2-Way Traffic	1,235	1,606	+371	

CURRENT (2024) TRAFFIC VOLUMES

As part of the City of Royal Oak's ongoing monitoring of their roadway network, existing 2024 traffic volume data was collected at four (4) locations along 11-Mile Road. Data was collected between Woodward Avenue and Maxwell Avenue, between Main Street and Troy Street, between Troy Street and Gainsborough Avenue, and between Campbell Road and Stephenson Highway. These 2024 traffic volumes were then compared with the baseline 2022 traffic volumes that were utilized for the Road Diet Traffic Study, in order to evaluate the changes in traffic volumes and patterns along the study roadway network, as summarized in **Table 2**.

Table 2: Traffic Volume Comparison

11-Mile Road		PM Peak Hour (vph)		
Woodward Avenue to Maxwell Avenue		2022 Study	2024 Vol	Difference
Eastbound Traffic	694	801	+107	
Westbound Traffic	662	552	-110	
2-Way Traffic	1,356	1,353	-3	
Main Street to Troy Street		2022 Study	2024 Vol	Difference
Eastbound Traffic	655	692	+37	
Westbound Traffic	654	484	-170	
2-Way Traffic	1,309	1,176	-133	
Troy Street to Gainsborough Avenue		2022 Study	2024 Vol	Difference
Eastbound Traffic	671	712	+41	
Westbound Traffic	607	496	-111	
2-Way Traffic	1,278	1,208	-70	
Campbell Road to Stephenson Highway		2022 Study	2024 Vol	Difference
Eastbound Traffic	609	659	+50	
Westbound Traffic	626	605	-21	
2-Way Traffic	1,235	1,264	+29	

CONCLUSIONS

The conclusions of this Sensitivity Evaluation are as follows:

- The results of the evaluation indicates that the major study intersections begin to fail with an approximately **30% increase** in the PM peak hour traffic volumes.
- The comparison of the 2022 baseline volumes and the current 2024 traffic volumes showed little to no change in the traffic volumes during the PM peak hour.
- The PM peak hour is the overall higher peak period for traffic volumes along 11-Mile Road and was utilized as the basis for the sensitivity evaluation. Therefore, the existing 2024 traffic volume data validates the 2022 Road Diet Study and the sensitivity evaluation performed.

Any questions related to this memorandum, study, analysis, and results should be addressed to Fleis & VandenBrink.



I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Michigan.