



Department of Public Services

Stockbridge Facility

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October 24, 2011

RE: Broadway Avenue and Lorraine Avenue Intersection Traffic Study

Dear Mr. Kushner,

This letter serves to summarize results of a multi-way stop study conducted for the intersection of Broadway Avenue and Lorraine Avenue.

Project Background

This study was performed to determine if installation of an All-Way Stop control is justified at the aforementioned location. The study was conducted at the request of the Oakland Drive-Winchell Neighborhood Association which you voiced at the meeting of the Traffic Board on August 11, 2011.

Multi-way Stop Warrant Requirements

The Michigan Manual on Uniform Traffic Control Devices (MMUTCD) provides criteria for warranting a multi-way stop controlled intersection. There are 4 warrants used to determine if a multi-way stop should be used. These warrants consider factors such as traffic volumes, speed of the roadway, and crash history. The following is a brief explanation of the warrants:

- Warrant 1, Stop Signs as an Interim Measure, indicates that a multi-way stop can be warranted for a short time while arrangements are made for a traffic control signal to be installed.
- Warrant 2, Accident Warrant, requires that the number of accidents in a 12-month period meet established thresholds.
- Warrant 3, Minimum Volume Warrant, requires that traffic volumes approaching the intersection meet thresholds for eight hours of a 24-hour period.
- Warrant 4, 80% Warrant, requires that both the number of accidents in a 12-month period and the traffic volumes meet 80% of thresholds specified in Warrants 2 and 3.

Warrant Analysis Results

Traffic volume data was found not to satisfy criteria specified in the MMUTCD for Warrants 3 and 4. Additionally, accident history indicates that no correctible crashes occurred at this

intersection in the past five years. Results of the multi-way stop warrants analyses are presented in **Table 1**.

Table 1: Multi-Way Stop Analysis Results

Warrant	Criteria	Data	Satisfied?
Warrant 1: Interim Measure	Intersection is being prepared for traffic signal	No traffic signal expected	NOT WARRANTED
Warrant 2: Accident Warrant	5 or more correctible crashes in 12 months	0 correctible crashes in past 5 years	NOT WARRANTED
Warrant 3: Minimum Volume Warrant	Major road > 299 vehicles/hour for 8 hours	Major Road meets criteria for 0 hours	NOT WARRANTED
	Minor road > 199 vehicles/hour, for 8 hours	Minor road meets criteria for 0 hours	
Warrant 4: 80% Warrant	4 or more correctible crashes in 12 months	0 correctible crashes in past 5 years	NOT WARRANTED
	Major road > 239 vehicles/hour for 8 hours	Major Road meets criteria for 0 hours	
	Minor road > 159 vehicles/hour, for 8 hours	Minor road meets criteria for 0 hours	

Conclusions

Counted traffic volumes do not satisfy thresholds criterion for Warrants 3 and 4. Accident history does not meet criteria for Warrants 2 or 4. Based on this analysis, the installation of an All-Way stop intersection is not warranted. Studies have shown that unwarranted stop signs are more likely to result in vehicles running the signs which can pose a safety risk to all road users, increased speeds away from the intersection, and enforcement problems when drivers feel that justification for stop signs is unnecessary. Since the intersection of Broadway Avenue and Lorraine Avenue is not warranted for an All-Way stop the City of Kalamazoo will not be installing the signage at this location.

As a part of this traffic study, City of Kalamazoo staff has also investigated the intersection sight distance requirements for vehicles approaching the intersection. Sight distances were evaluated and found to be satisfactory for both stop controlled approaches on Lorraine Avenue. No further changes to the roadside are recommended at this time. If you have any questions, comments, or would like additional data from this study, please feel free to contact me at (269)337-8612.

Sincerely,



Jim Hoekstra, P.E.
Traffic Engineer
City of Kalamazoo