



## Department of Public Services

### *Stockbridge Facility*

Engineering Division  
415 Stockbridge Avenue  
Kalamazoo, MI 49001-2898  
Ph.269.337.8601  
Fx.269.337.8533

December 5, 2011

RE: Winchell Avenue and Rambling Road Intersection Traffic Study

Dear Concerned Citizen,

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

### **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 a citizen on August 17, 2011. Following the Oakland Drive Winchell Neighborhood Association meeting on November 9, 2011, residents expressed concerns that the previous study did not accurately evaluate traffic during the busy school season. Winchell Elementary is located east of Rambling Road and residents asked that traffic volumes be reinvestigated when school was in session.

### **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 volumes were counted on November 22, 2011 while Winchell Elementary School was in session. A summary of vehicular traffic volumes are provided in **Table 1**. According to the MMUTCD, vehicular volumes must meet thresholds for the major street while minor street volumes may include vehicular, pedestrian, and bicycle volumes to meet required thresholds. A review of traffic volumes indicates that major roadway (Winchell Avenue) vehicle volumes failed

to satisfy criteria specified in the MMUTCD for Warrants 2 and 4. Accident history indicates that only one crash occurred at this intersection in the past five years. Results of the multi-way stop warrants analyses are presented in **Table 2**.

**Table 1: Traffic Volume Data**

22-Nov-11	Winchell Avenue			Rambling Road		
	Eastbound	Westbound	Total	Northbound	Southbound	Total
0:00-1:00	2	6	8	1	10	11
1:00-2:00	4	5	9	0	12	12
2:00-3:00	2	3	5	0	4	4
3:00-4:00	1	1	2	0	2	2
4:00-5:00	4	1	5	1	2	3
5:00-6:00	12	14	26	0	7	7
6:00-7:00	37	34	71	5	21	26
7:00-8:00	94	118	212	33	57	90
8:00-9:00	92	147	239	22	94	116
9:00-10:00	72	119	191	22	86	108
10:00-11:00	66	109	175	25	94	119
11:00-12:00	57	122	179	15	133	148
12:00-13:00	68	138	206	23	134	157
13:00-14:00	54	120	174	19	123	142
14:00-15:00	66	150	216	17	154	171
15:00-16:00	91	164	255	18	178	196
16:00-17:00	63	169	232	31	182	213
17:00-18:00	70	157	227	30	194	224
18:00-19:00	64	111	175	23	152	175
19:00-20:00	46	88	134	15	119	134
20:00-21:00	33	61	94	8	102	110
21:00-22:00	22	36	58	10	58	68
22:00-23:00	18	29	47	7	50	57
23:00-24:00	12	12	24	1	33	34
Total	1050	1914	2964	326	2001	2327

**Table 2: Multi-Way Stop Analysis Results**

Warrant	Criteria	Data	Satisfied?
Warrant 1: Interim Measure	Intersection is being prepared for traffic signal	No traffic signal proposed	NOT WARRANTED
Warrant 2: Accident Warrant	5 or more correctible crashes in 12 months	1 crashes in 12-month period	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 2 hours	
Warrant 4: 80% Warrant	4 or more correctible crashes in 12 months	1 crashes in 12-month period	NOT WARRANTED
	Major road > 239 vehicles/hour for 8 hours	Major Road meets criteria for 1 hours	
	Minor road > 159 vehicles/hour, for 8 hours	Minor road meets criteria for 5 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 Winchell Avenue and Rambling Road is not warranted for an all-way stop the City of Kalamazoo will not be installing the signage at this location.

Investigation which was previously completed by City of Kalamazoo staff determined that intersection sight distance is adequate. Staff verified that at least 280' of clear vision is available to motorists turning from Rambling Road onto Winchell. No further changes to the roadside are recommended at this time.

An additional speed study is underway for Winchell Avenue in an effort to address concerns of speeding vehicles. The speed study will be sent to the Oakland Drive Winchell Neighborhood Association for distribution of neighborhood residents. If you have any questions or comments on either of these studies, please feel free to contact me at (269)337-8612.

Sincerely,



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