Study Date: November 22, 2016 AM
November 30, 2016 PM
April 6, 2017 AM
April 25, 2017 PM

SCHOOL CROSSING ANALYSIS
City of Madison
Department of Transportation
Traffic Engineering Division

School Emerson Elementary

Crossing Location North + E Johnson

Elementary School Children Crossing North, N Leg

					POINTS a.m.	POINTS p.m.
1) Number of elementary students crossing	**number**	**points**	**number**	**points**	1	2
	1 - 5	1	25 - 29	6		
a.m. peak hour (7:00 to 8:00) 5	6 - 9	2	30 - 34	10		
	10 - 14	3	35 - 39	15		
p.m. peak hour (2:30 to 3:30) 7	15 - 19	4	40 - 49	20		
School Schedule 7:45am-2:37pm	20 - 24	5	50 - 74	30		
			75 – 99	35		
2) Gap Availability					12	24
crossing distance = 42 **feet**	**% safe gap time**	**points**	**% safe gap time**	**points**		
	80 +	0	45 - 49	20		
	70 - 79	4	40 - 44	24		
minimum safe crossing time = 14 **seconds**	60 - 69	8	30 - 39	28		
	55 - 59	12	20 - 29	32		
	50 - 54	16	0 - 20	36		
% safe crossing time = 57 **% a.m.**	• Signalized intersection.					
43 **% p.m.**	• Safe gap calculated during Walk Phase.					
3) Motor Vehicle Speed	**mph**	**points**	**mph**	**points**	1	1
	< = 20	0	36 - 40	7		
85th percentile speed = 25 **mph a.m.**	21 - 25	1	41 - 45	11		
	26 - 30	2	46 +	15		
25 **mph p.m.**	31 - 35	4				
4) Sight Distance					0	0
	design stopping distance					
	85th %ile speed	**feet**				
available sight distance: _____ **feet** _____ **bound**	< = 25 mph	155				
	26 - 30 mph	200				
_____ **feet** _____ **bound**	31 - 35 mph	250				
	36 - 40 mph	305				
	41 - 45 mph	360				
	46 + mph	425				
ratio: available sight distance / design stopping distance						
	ratio	**points**				
_____ **feet** _____ **bound**	2.1 +	0				
	1.5 - 2.0	1				
_____ **feet** _____ **bound**	1.0 - 1.5	5				
	< 1.0	15				
5) Safety History - Previous Five Years					0	0
a) Number of reported crashes at study location involving elementary school children going to or coming from school.	**crashes**	**points**				
	0	0				
	1	8				
0 **reported crashes**	each add'l	20				
b) Reported crashed not involving children going to or coming from school, but of types and/or at times that could conflict with school crossing at this location.					1	2
		points				
1 **reported crashes. Type:** Rear End PM		0 - 5				
1 **reported crashes. Type:** Single Vehicle PM		0 - 5				
1 **reported crashes. Type:** Angle PM		0 - 5				
6) Other Factors		points			2	2
Foreign traffic route.		0 to +5				
For each approach in excess of four.		+5				
For complex signal or crossing design.		+5 to +10				
For simple signal or crossing design.		-5 to -10				
Safer crossing one block out of the way.		-10				
Large percentage of grades K and 1 students (over 40%).		0 to +5				
An intersection of two arterial streets where total weekday traffic approach volume exceeds 25,000 vehicles.		+4				
Children crossing multiple crosswalks at an intersection.		0 to +10				
Stopped buses and/or other obstructions.		0 to +5				
Volume of turning traffic not reflected in gap availability.		0 to +5				
Observations of the percent and types of trucks during the times when students are using the crossing						
TOTAL HAZARD RATING					17	32

Interpretation of Hazard Rating

Using the hazard rating as a guide, the following measures are appropriate:

1. **Mark as a school crossing** when the hazard rating is greater than 20 points at a crossing used by at least 25 elementary school students during the peak crossing hour. The Traffic Engineer is authorized to mark such a crossing with appropriate warning signs and special crosswalk markings.

2. **Install flashing beacons** if any one of the following conditions is met:

a. The 85th percentile speed is in excess of 40 mph measured at existing school crossing signs which have been in place at least 30 days.

b. The street crossed is a U.S. or State Trunk Highway on which a significant percentage of "foreign " drivers can be expected.

c. The ratio of sight distance to safe stopping distance is less than 1.5.

d. The hazard rating is greater than 30 at an unguarded location where at least 25 elementary students cross and the available safe crossing gaps are less than 50 percent.

3. **Recommend the assignment of an adult school crossing guard** when the hazard rating is greater than 40 points at a crossing used by at least 25 elementary school students during the peak crossing hour.

If the school has only grades K through 2, recommend the assignment of an adult school crossing guard in the hazard rating is greater than 30 points at a crossing used by at least 15 elementary school students during the peak crossing hour.

4. **Recommend the discontinuance of adult school crossing guard protection** at a crossing where the hazard rating falls below 30 points or if the number of elementary school students crossing during the peak hour in less than 15.

At the intersection of two arterial streets where the total weekday entering traffic volume exceed 25,000 vehicles, the total number of students crossing at the intersection will be used to compare to the minimum of 15 students required to retain an adult school crossing guard.

Remarks/Recommendations

- Safe gaps above 43% during peak hours.
- Signalized intersection.
- Safe gaps calculated during E Johnson Green Time/North St Walk phase.
- 3 of the students crossing E Johnson were accompanied by a parent/adult.
- 7 out of 31 possible elementary school students who live in the area served by this crossing walked and used the crossing guard. 23%

Recommend discontinuance of Adult School Crossing Guard since this location does not meet the criteria for minimum number of elementary students.

by Gretchen M. Avilés Piñeiro **Date** May 11th, 2017