

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. | p.m. |
| 1) Number of elementary students crossing | <u>number</u> | <u>points</u> | <u>number</u> | <u>points</u> | | | |
| a.m. peak hour (7:00 to 8:00) <u>5</u> | 1 - 5 | 1 | 25 - 29 | 6 | | | |
| | 6 - 9 | 2 | 30 - 34 | 10 | | | |
| p.m. peak hour (2:30 to 3:30) <u>7</u> | 10 - 14 | 3 | 35 - 39 | 15 | | | |
| | 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 = <u>42</u> feet | <u>% safe</u> | | <u>% safe</u> | | | | |
| | <u>gap time</u> | <u>points</u> | <u>gap time</u> | <u>points</u> | | | |
| | 80 + | 0 | 45 - 49 | 20 | | | |
| minimum safe crossing time = <u>14</u> seconds | 70 - 79 | 4 | 40 - 44 | 24 | | | |
| | 60 - 69 | 8 | 30 - 39 | 28 | | | |
| % safe crossing time = <u>57</u> % a.m. | 55 - 59 | 12 | 20 - 29 | 32 | | | |
| <u>43</u> % p.m. | 50 - 54 | 16 | 0 - 20 | 36 | | | |
| | <ul style="list-style-type: none"> • Signalized intersection. • Safe gap calculated during Walk Phase. | | | | | | |
| 3) Motor Vehicle Speed | <u>mph</u> | <u>points</u> | <u>mph</u> | <u>points</u> | | 4 | 4 |
| 85th percentile speed = <u>31</u> mph a.m. | < = 20 | 0 | 36 - 40 | 7 | | | |
| | 21 - 25 | 1 | 41 - 45 | 11 | | | |
| <u>32</u> mph p.m. | 26 - 30 | 2 | 46 + | 15 | | | |
| | 31 - 35 | 4 | | | | | |
| 4) Sight Distance | | | <u>design stopping distance</u> | | | 0 | 0 |
| available sight distance: _____ feet _____ bound | | | <u>85th %ile speed</u> | <u>feet</u> | | | |
| _____ feet _____ bound | | | < = 25 mph | 155 | | | |
| | | | 26 - 30 mph | 200 | | | |
| ratio: available sight distance / design stopping distance | | | 31 - 35 mph | 250 | | | |
| | | | 36 - 40 mph | 305 | | | |
| | | | 41 - 45 mph | 360 | | | |
| | | | 46 + mph | 425 | | | |
| | | | <u>ratio</u> | <u>points</u> | | | |
| _____ feet _____ bound | | | 2.1 + | 0 | | | |
| _____ feet _____ bound | | | 1.5 - 2.0 | 1 | | | |
| | | | 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. | | | <u>crashes</u> | <u>points</u> | | | |
| | | | 0 | 0 | | | |
| <u>0</u> reported crashes | | | 1 | 8 | | | |
| | | | 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. | | | | <u>points</u> | | 1 | 2 |
| <u>1</u> reported crashes. Type: <u>Rear End</u> _____ PM | | | | 0 - 5 | | | |
| <u>1</u> reported crashes. Type: <u>Single Vehicle</u> _____ PM | | | | 0 - 5 | | | |
| <u>1</u> reported crashes. Type: <u>Angle</u> _____ PM | | | | 0 - 5 | | | |
| 6) Other Factors | | | | <u>points</u> | | 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 | | | | | | 20 | 34 |

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.
- 7 out of 31 possible elementary school students who live in the area served by this crossing walked and used the crossing guard. 23%

Crossing Guard monthly counts:

| EMERSON | | | | | | |
|--------------------|------------------------------------|--------|------|------------|--------|------|
| NORTH / E. JOHNSON | | | | | | |
| DATE | AM | | | PM | | |
| | ELEMENTARY | MIDDLE | HIGH | ELEMENTARY | MIDDLE | HIGH |
| 11/10/16 | 4 | 0 | 3 | 7 | 1 | 0 |
| 12/13/16 | 1 | 0 | 1 | 5 | 2 | 0 |
| 01/26/17 | Crossing Guard off - no count done | | | | | |
| 02/16/17 | 3 | 2 | 2 | 8 | 4 | 0 |
| 03/28/17 | 2 | 0 | 0 | 4 | 2 | 2 |
| 04/26/17 | 5 | 1 | 2 | 8 | 1 | 1 |
| 09/26/17 | 16 | | | 8 | | |

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